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THE

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OF

MEDICAL SCIENCE

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PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*Why are the Great Motor and Sensory Tracts of the Central Nervous System crossed?* By A. FRANCIS DIXON, M.B., Sc.D.

I AM not sure if the following facts are usually taken into consideration in viewing the disposition of the great motor and sensory tracts of the central nervous system. They appear to me to throw considerable light on the meaning of the crossing of the great motor and sensory nerve tracts.

In man we know that the right half of each retina is connected with the right occipital lobe of the cerebrum, and similarly the left half of each retina is connected with the left hemisphere of the cerebrum. The right half of each retina is, however, associated with the left half of the field of vision, and similarly the left half of each retina is associated with the right half of the field of vision. It is, naturally, important that the right hand and the right side of the body generally should be associated with the right half of the field of vision—*i.e.*, that the motor and sensory centres for the right half of the body and the centre for the right half of the field of vision should be close together and on the same side of the cerebrum.

Thus the crossing of the great tracts appears to be associated with, or perhaps dependent on, the crossing of the field of vision, due to the employment of a lens in producing an image of external objects on the retina. This lens necessarily inverts the field of vision, and projects the images of objects to the right of the observer on to the left portions of his retinæ. The crossed condition is retained by the disposition of the fibres at the optic commissure. What has been said above would appear to hold for animals with binocular vision. In animals with monocular vision, and in those whose eyes move independently and possess different outlooks, the connections of the optic nerve fibres with the brain are different, and the crossing of the great motor and sensory tracts is less complete or less sharply defined.

I have found the accompanying diagram useful in enabling students to see at a glance the significance of the crossing of the motor and sensory nerve tracts. Although I have been unable to find such significance of the crossing of the nerve-tracts emphasised in text-books of anatomy or physiology I am not sure that the idea, which was first suggested to me by a conversation with Professor G. D. Thane some years ago, is not quite familiar to, and taught by, physiologists.

The diagram illustrates the manner in which the right half of the field of vision, the right hand, and the right side of the body are brought into connection with the left cerebral hemisphere; and similarly the left half of the field of vision, the left hand, and the left half of the body with the right cerebral hemisphere.

The crossing of the great nerve tracts is seen to bring each side of the body into relationship with the corresponding half of the field of vision.

The recent observations of Elliot Smith on the relative size of the visual area of the cortex on the right and left sides of the brain are of extreme interest. He has shown

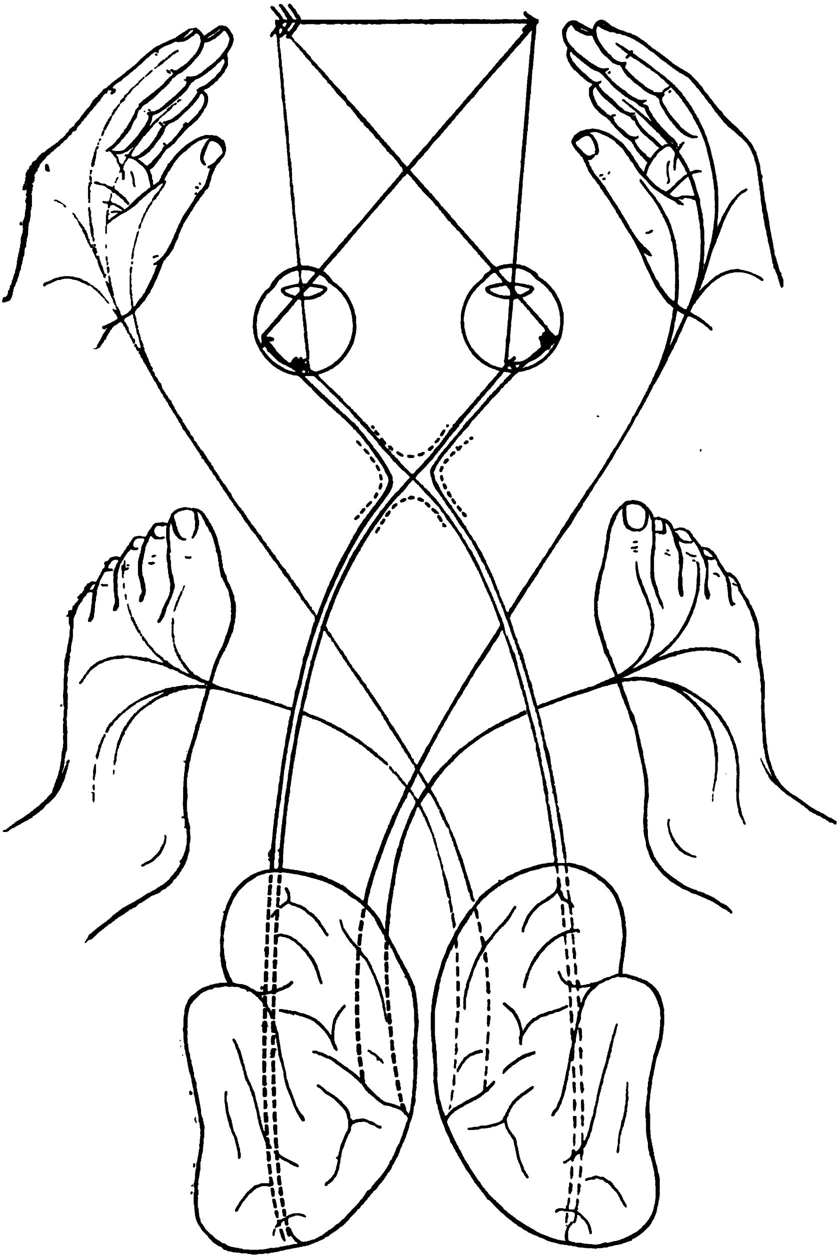

Diagram to illustrate the crossing of the Great Motor and Sensory Nerve Tracts.

that, in white races, the left visual area—*i.e.*, the one connected with the right side of the field of vision, and, as the diagram shows, most closely associated with the right hand and right side of the body generally, is distinctly larger than the corresponding area on the right side of the brain. [*Anatomischer Anzeiger*, June 10, 1907. Page 574.]

ART. II.—*Splenic Enlargement and its Influence on the Blood.*[a]

By T. LOUIS DE COURCY, M.D., Univ. Dub.; The Infirmary, Southport.

IN the treatment of this subject—a subject which plays a much more important part in Medicine than is generally supposed—only those diseases which cause marked enlargement of the spleen will be dealt with in detail, those causing slight and temporary enlargement being passed over with only brief reference.

A short account of the general anatomy and functions of the spleen will be necessary in order to make it fully understood how an organ of such small size is capable of enlargement to a degree proportionally much more marked than that of any other organ in the body, with the possible exception of the thyroid and some lymphatic glands.

The spleen is situated in the left hypochondrium, its external surface being related to the under surface of the diaphragm, which separates it from the ninth, tenth and eleventh ribs of the left side, and from the lower border of the left lung and pleura. Its internal surface is related to the posterior wall of the great end of the stomach, the tail of the pancreas, and the outer surface of the left kidney. The lower end lies on the splenic flexure of the colon, and the whole organ is held in position by folds of peritoneum. It will thus be seen that excessive enlargement may by pressure on these structures to which it is related cause such symptoms in the patient as dyspnœa, gastric disturbance, diarrhœa or constipation, and occasionally kidney trouble, besides the symptoms which necessarily follow the blood changes. The average weight of the spleen in a healthy adult is seven ounces, but its size is variable according to the state of nutrition of the body, being large in those who are accustomed to good food and small in badly fed people, or those who for any cause have been starved for a considerable time. Supernumerary spleens may occur in health, varying in size from that of a pea to that of a plum. The spleen is covered on the outside by a serous coat, under which is a fibro-elastic coat which forms its framework, and at the hilum is reflected on the vessels in the form of sheaths, from which fibrous bands, named trabeculæ, spread in different directions. These unite and form a spongelike material consisting of spaces called areolæ, contained in which is the spleen pulp.

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[a] Being a Thesis read for the Degree of Doctor of Medicine of Dublin University, February, 1907.

The trabeculæ are of white and yellow elastic tissue, which tissue possesses great elasticity, and so allows for the great variation in the size of the spleen. In the trabeculæ there is also a small amount of non-striped muscular fibre, to which the spleen owes its power of contractability. The spleen pulp is a small, reddish-brown mass consisting of branching cells, which are of connective tissue corpuscles, the processes of which cells communicate with each other, forming a reticular tissue. Thus each primary space is subdivided into secondary spaces containing blood, of which the white blood corpuscles are in greater proportion than in ordinary blood, and also blood corpuscles in all stages of degeneration.

The splenic artery, which is large and tortuous, divides into from four to six branches, which enter the hilum and ramify through the substance of the spleen, the branches finally terminating in the spleen pulp. The larger branches rarely anastomose with the other branches, but this sometimes happens : the external coats of the arterioles become thickened and converted into lymphoid tissue, which is supplied with blood. This lymphoid tissue presents here and there spheroidal thickenings—*i.e.*, the Malpighian bodies of the spleen, which vary in size from $\frac{1}{100}$th to $\frac{1}{25}$th of an inch. They are thus only hyperplasiæ of lymphoid tissue which generally surround the arterioles, and they resemble the adenoid tissue of lymphatic glands. Blood is then collected from the interstices by the rootlets of the veins, and the smaller veins unite into larger ones which enter the trabecular sheaths of the capsule forming from four to six branches, emerge from the hilum, and uniting form the splenic vein. The veins have numerous anastomoses. It will be seen that the spleen is intimately connected with the portal system, and that by enlargement of the spleen this circulation may be impeded, giving rise to congestion of the liver and secondarily congestion of heart, lungs, &c.

The lymphatics originate—(1) from the sheaths of the arteries; (2) in the trabeculæ. Those forming the first group accompany the blood vessels, and those forming the second pass to the superficial lymphatic plexus, which may be seen on the surface of the organ. They pass through the lymphatic glands in the hilum and terminate in the thoracic duct.

The functions of the spleen may be briefly summarised under five heads :—

(1) The formation of white blood corpuscles. It is shown that the blood in the splenic vein contains an unusually large amount of white blood corpuscles, and in leucocythæmia, in which disease they are enormously increased, the spleen (especially the Malpighian corpuscles) undergoes great hypertrophy. The white blood corpuscles formed in the spleen also probably leave by the lymphatic vessels. It is also shown that if the spleen is stimulated to contract by the electric current the number of leucocytes in the blood is almost immediately increased.

(2) The formation in some animals (including man) of coloured corpuscles. Cells are formed in the spleen similar to those described in red marrow, and called hæmatoblasts.

(3) Many of the red blood corpuscles undergo disintegration in the spleen, as is shown by these being found in the spleen pulp in various stages of degeneration. Also in diseases in which the destruction of blood corpuscles is increased (as in pernicious anæmia) iron accumulates in the spleen and liver.

(4) From the constant presence in the spleen of uric acid in

larger quantities than in other organs, as well as xanthin and protoxanthin, some share of nitrogenous metabolism is thought to occur in it.

(5) The spleen fulfils some purpose in regard to the portal circulation with which it is in close connection. It is supposed to act as a sort of vascular reservoir or diverticulum to the portal system, or, perhaps, particularly to the vessels of the stomach, as it admits of distension rapidly, and is generally small when gastric digestion is going on. This function is also shown by the enlargement it undergoes in certain affections of heart and liver, attended with obstruction of the passage of blood through the liver, and by its diminution when the congestion of the portal system is relieved by discharges from the bowels or by effusion of blood into the stomach.

In the spleen are to be found nucleated amœboid cells whose protoplasm contains hæmoglobin. These primarily are transformed into red blood corpuscles by atrophy and the extrusion of the nucleus. The reason why the liver is so often affected in splenic cases is that in the final stage resolution with liberation of hæmoglobin takes place there.

Fortunately for clinical purposes splenic enlargement is very easy to diagnosticate, little difficulty being experienced in palpating the spleen even when very slightly enlarged. If the fingers be gently pressed beneath the costal margin on the left side, the palm of the hand resting on the chest wall, the slightly enlarged spleen can readily be felt on deep respiration of the patient. In inspected cases of typhoid fever some little care must be exercised in doing this, as cases are on record where too vigorous palpation has caused rupture of the spleen and death of the patient.

There are few things from which an enlarged spleen has to be diagnosticated—perhaps the commonest is enlarged kidney. On percussion over a suspected enlargement of the kidney the outline of the colon can be made out passing over that organ; also, the kidney is more fixed and the characteristic splenic outline is absent. Cases of ovarian cyst and encysted pleurisy have also been mistaken for enlarged spleen; but even a small amount of care will prevent mistakes of this sort. Conversely cases have been published in which "wandering" spleens have been cut down upon in mistake for tumours, an almost excusable error in these recorded cases. An example of enlarged wandering spleen is reported from Plymouth Hospital.

The patient was a girl, aged twenty-one, who complained of occasional vomiting, with abdominal pain and swelling; she suffered frequently from jaundice. She had a hard, movable swelling of very variable size above the left groin. From the history given either hydronephrosis or ovarian tumour was the diagnosis decided upon, but on opening the abdomen a hugely enlarged purple spleen, which had twisted round on its pedicle, was discovered. Splenectomy was performed, and the patient made a good recovery, leaving hospital in a healthy condition and with a perfectly normal blood-count. Unfortunately no blood-count was made previous to operation, though the patient was markedly anæmic. The excised spleen, counting the amount of blood which escaped from it, weighed forty-seven ounces.

In dealing with the causes of splenic enlargement, reference will first be made to those cases in which the enlargement is slight and temporary.

(1) *Acute infective diseases* such as typhoid fever, pneumonia, erysipelas, diphtheria, the exanthemata, &c. In ordinary cases the enlargement is small, but exceptional cases have occurred in which the spleen has become twice its natural size. The increase may be due to hyperæmia, which is a distension of the veins and an infiltration of the pulp with red blood corpuscles and white blood corpuscles, or it may be due to swelling and increase of cells of the pulp, glomeruli, or both. The cells found consist of multinuclear cells, leucocytes, and cells in fatty degeneration. In typhoid fever percussion is uncertain owing to distension of the stomach and colon, and on *post-mortem* examination spleens are often found to be enlarged which were not suspected of being so during life. A case has been recently reported in one of the medical journals of spontaneous rupture of the spleen in typhoid fever. The patient showed all the signs of perforation, and on the abdomen

being opened the rupture was discovered, but it was too late to save the life of the patient. During the first two weeks there is little change in the blood in these infective cases, but Hayem declares that sweats and diarrhœa may make the number of red blood corpuscles rise. In the third week there is a fall in the number of red blood corpuscles, even to 1,300,000 per c.mm., the percentage of hæmoglobin being also lowered, but a rise in both occurs during convalescence. The white blood corpuscles are subnormal all through, and this may be used as a diagnostic point to distinguish from septic fevers, &c. Large mononuclear cells are increased and polynuclear neutrophiles are diminished. When an inflammatory process occurs the polynuclears are increased.

(2) *Pyæmia and Septicæmia.*—The spleen is soft and dark, and hæmorrhages occur. Internally a hyperæmic condition is found, but there are no thrombi or emboli. There is marked leucocytosis, which often attains a very great height.

(3) *Tuberculosis.*—The swelling is due to hyperæmia and hyperplasia of the parenchyma. The two most common conditions found are (*a*) acute miliary tubercles, (*b*) chronic caseous nodules. There is an early leucocytosis which is very high in the later stages. The red blood corpuscles are rarely below two millions. Blood plates are increased enormously, and are seen in the withdrawn blood as "Schultze's granular masses."

(4) *Amyloid Disease.*—The two varieties of amyloid spleens are the "sago" spleen, in which the Malpighian corpuscles are affected, and the "waxy" spleen, where the pulp is affected. This condition is generally secondary to phthisis, syphilis, kidney and liver disease.

(5) *Passive congestion*, or interference with the portal circulation, which has been already referred to, and may be hepatic, cardiac, or due to thrombosis. The blood changes are very slight.

(6) *Obliteration of the Splenic Vein.*—This is a very rare cause, but there are cases on record of its occurrence—*e.g.*, that of a woman with attacks of hæmoptysis and enlarged spleen. Her red blood corpuscles numbered 662,000 per c.mm., which gradually increased after a few attacks to 3,200,000.

On *post-mortem* examination the splenic vein was found obliterated, due to thrombosis.

(7) *Tumours.*—(*a*) Simple cavernous tumours—angiomata and fibromata; (*b*) malignant—sarcomata (primary or secondary), carcinomata (secondary to gastric). Dermoid and other cysts also occur, and also parasites—such as echinococcus—cause cysts. In the simple tumours there is little change in the blood, but in malignant growths anæmia is often marked. The red blood corpuscles may sink to 3,000,000, but the leucocytes are little altered, generally averaging from 8,000 to 10,000 per c.mm., and the hæmoglobin about 50 per cent.

(8) *Syphilis.*—Generally in children, of the congenital variety. The blood is little altered; the capsule of the spleen is thickened; the trabeculæ are usually prominent; there is hyperplasia of the pulp and interstitial tissue, and the parenchyma cells are increased.

(9) *Infarcts.*—(*a*) Anæmic, (*b*) hæmorrhagic.

(10) *Anthrax.*—This disease, which used to be called splenic fever, has come into prominence lately on account of its prevalence in Liverpool and other cities. It is also known as "wool-sorters' disease," as it is most frequently those engaged in this occupation and those working with hides who get infected with the anthrax bacillus through some break in their skin. It is a most virulent and rapidly fatal disease, the temperature going up to about 103°, and hæmorrhages, vomiting, dyspnœa, delirium, collapse and death occur with dreadful rapidity. There is a marked leucocytosis, and the blood remains dark and fluid for a long time after death. The spleen is usually moderately enlarged, but it may be normal.

(11) *Hodgkin's Disease.*—In this disease is seen great enlargement of the lymphatic glands. The enlargement of the spleen is rarely very great, not nearly so large as the leukæmic spleen, but it presents lymphoid growths. If the spleen assumes the size of that in leukæmia the case is probably not a simple lymphadenoma. The red blood corpuscles are diminished to nearly 60 per cent. of the normal, are rarely below two millions, and show poikilocytosis. Nucleated red blood corpuscles may be found, but not in such numbers as

in leukæmia. When the glands are soft there may be a moderate leucocytosis, even so much as to make the case appear like spleno-medullary leukæmia.

(12) *Pernicious Anæmia.*—Only occasionally the spleen is greatly enlarged in this disease—generally only moderately. The bone marrow is of a reddish purple, with a great number of nucleated red blood corpuscles, especially megaloblasts. There is an abundant supply of iron in the cells of the spleen. The blood is excessively pale, and the red blood corpuscles are reduced to anything from 2,500,000 to 500,000 per c.mm., with diminution of hæmoglobin (30 per cent.), which is less in proportion, so that the colour index is greater than one. Megalocytes (giant cells) are common, and poikilocytes, which are generally rod-like or pyriform, are very numerous. Microcytes (a deep red) also occur, and red blood corpuscles with fragmented nuclei are common. Blood plates are absent or scanty. The leucocytes are generally normal or diminished, but there may be a lymphocytosis. Among the leucocytes there is a diminution in polynuclears.

(13) *Banti's Disease* may here be mentioned, though the splenic enlargement is pretty considerable. This disease, which is symptomised by splenomegaly with anæmia, is really a cirrhosis of the liver with splenic enlargement. The red blood corpuscles are reduced, and nucleated red cells are found. The white blood corpuscles are diminished, though there is a high lymphocytosis.

Malaria can scarcely be included under the foregoing classification or under the one next to be made, as though the splenic enlargement is considerable the blood is affected in an entirely different way from the other blood diseases. Laveran in 1880 noted pigment bodies in the blood of patients suffering from malaria, and Golgi later noted that the paroxysms of fever coincided with the sporulation of the parasites. Then it was discovered that the paroxysms of quotidian ague differed from tertian, and these from the more severe forms. The parasite was named the Hæmamœba or Plasmodium malariæ, and the mosquito was found to be the intermediate host. The corpuscle becomes larger and paler as the hæmamœba grows and the hæmoglobin diminishes. Segmentation occurs and gametocytes form. The mosquito sucks the blood, forms develop in the stomach of the mosquito, enter the circulation of man, and attack the blood corpuscles. The blood is hydræmic, the serum is tinged with hæmoglobin, and the red blood corpuscles present endoglobular forms of parasites in all stages. There is a marked diminution in the number of red cells and the pigmentation of the leucocytes. The spleen is found in two forms—(*a*) acutely enlarged during fever, (*b*) chronically enlarged—ague cake. It is often movable, and may be mistaken for ovarian cysts and uterine fibroids. There is a deposit of black pigment which makes the pulp of the spleen lake-coloured and turbid.

We now come to consider, perhaps, the most important part of our subject—*i.e.*, the diseases causing marked splenomegaly, cases where in some instances the spleen occupies the greater part of the abdominal cavity.

(1) *Anæmia Splenica Infantum.*[a]—Before enlarging on this disease it may be as well to state a few facts about the blood in children. In young infants the proportion of lymphocytes is higher than in adults—up to 40 per cent. Leucocytosis is more easily produced, and in anæmia nucleated red blood corpuscles are formed, principally normoblasts, but megaloblastic forms are also met with. In children the spleen enlarges from slighter causes in anæmias than in adults, and the proportion of red marrow cells in the bones is greater, and especially increased by rickets.

This disease was first described by von Jaksch, and called by him Anæmia pseudoleukæmia infantum. The question is still under discussion as to whether it is really to be considered a separate disease or not. It is generally found in rickety, syphilitic or tubercular children. They are pale, badly nourished, have great splenic hypertrophy, slight liver enlargement, and very markedly enlarged lymphatic glands, with a tendency to hæmorrhages. This enlargement in all these cases is a simple hypertrophy. The marrow is red and

[a] Anæmia Splenica Infantum. Dr. T. Gillman Moorhead. Dublin Journal of Medical Science. May, 1906. Vol. CXXI. Page 341.

soft, and there are an undue lot of nucleated red blood corpuscles. As regards the blood, the red blood corpuscles are diminished even to 1,000,000 per c.cm., and contain many nucleated red blood corpuscles, and there is a considerable leucocytosis—from 20,000 to 50,000 per c.mm. All these symptoms occur in a child from six to thirty months old. I shall describe in detail a case of this extremely interesting disease which occurred in the Royal City of Dublin Hospital under the care of Dr. T. G. Moorhead.

P. G., a child, aged three years, was admitted to hospital on August 28, 1905. The father died of phthisis, but the mother was alive and healthy, and suffered from neither syphilis nor phthisis. One of the other children died of convulsions. The patient was a healthy child till twelve months old, when he became weakly and anæmic. Soon afterwards he had measles, and after it was better the abdomen began to swell, also the feet and eyelids. He became weaker, and was unable to support himself when sitting. On examination the child was found to be uniformly pallid, especially in the conjunctivæ and mucous membranes, and there was some evidence of rickets. The cervical and axillary glands were slightly enlarged. The abdomen was enormously distended, and there were protruding veins. The spleen was felt with great ease, extending to the umbilicus, and as low as Poupart's ligament, but it was not tender, and no rub was heard over it. The liver was enlarged to the level of the umbilicus; there were some ascites and albumen, and casts were found in the urine. As regards the blood, the red blood corpuscles were about two million per c.cm. There was great variation in their size, with marked poikilocytosis and polychromatophilia, and nucleated red blood corpuscles. The hæmoglobin was 52 per cent., and the white blood corpuscles 9,660 per c.cm. made up of lymphocytes, 40 per cent.; hyaline cells, 15 per cent.; eosinophiles, 2 per cent.; neutrophiles, 42.5 per cent.; basophiles, 5 per cent.; together with a few myelocytes. Most of the lymphocytes were large. The treatment was—arsenic, cod liver oil, proteid diet, bone marrow, and grey powder. The spleen got smaller for three weeks, and the weight of the child increased, but the red blood corpuscles diminished to about one million per c.mm. The spleen, though smaller, became tender, whilst the liver varied greatly in size. Valvular disease of the heart developed, and the temperature rose. The white blood corpuscles remained about 10,000, with an average of 50 per cent. non-granular cells. There was an increase in myelocytes and nucleated red blood corpuscles, and the hæmoglobin fell to 40 per cent. X-ray treatment was started, and the spleen of the child was exposed for ten minutes daily on fourteen occasions, but no good result followed. The child developed crepitus at the base of the left lung, became peevish and irritable, and died suddenly on November 2.

Autopsy.—The heart was dilated and the lungs were œdematous. The lymph glands—especially the mediastinal—were enlarged, and of a deep red colour. The spleen was very much enlarged, firm, hard, and red, with a thickened capsule; the Malpighian bodies did not show clearly. The liver was considerably enlarged. The kidneys showed multiple sub-capsular hæmorrhagic infarcts, and had their entire pelves filled with one large blood-clot. The intestines were very anæmic. As regards the abdominal lymph glands—(*a*) the mesenteric were white and cheesy on section (tubercular); (*b*) the aortic and iliac were greatly enlarged and of a deep red colour, and on section looked like pieces of spleen tissue. On microscopic examination the spleen showed a thickened capsule, with trabeculæ passing into the pulp, which was markedly fibrosed. The Malpighian corpuscles were small, and most of them were replaced by nodules of hyaline matter, which seemed to have spread from the wall of the central artery. The lumen of the vessels was often occluded by endothelial cells. The spaces of the pulp were densely packed with red blood corpuscles and normoblasts, and a few eosinophiles were scattered about. The whole organ showed chronic fibrosis, but no sign of tuberculosis. The mesenteric lymph glands were tubercular, but the others showed an appearance similar to that of the spleen—*i.e.*, diffuse fibrosis. The bone-marrow of the femur and tibia appeared normal, the mononuclear cells largely predominating, and no abnormal forms of red cells were found.

The tuberculosis of the lymph glands must be regarded as a secondary infection, and the mild rickets, together with the large number of normoblasts in the blood, show the case to be an example of the disease described by von Jaksch. Telling describes a case in which the appearance of the lymph glands was somewhat similar. The only atypical symptom in the case was the scarcity of oxyphile cells in the pulp. A hæmorrhagic tendency is present to a more or less marked degree in all the recorded cases, but the kidney hæmorrhage is unusual. The absence of leucocytosis does not appear significant, as counts as low as 1,800 per c.mm. have been recorded. This disease is identical with neither the splenic anæmia of adults nor any of the varieties of leukæmia, and it is now generally regarded as a disease *sui generis*. Some evidence, however, supports the view that it is really a secondary anæmia, and may be produced by any cause of cachexia, such as rickets, congenital syphilis, or chronic gastro-intestinal catarrh. If rickets has really any influence the condition ought to be much more common than it is, and should be found more often in the severer types of that affection.

(2) *Splenic Anæmia of Adults.*—This disease, first noticed by Wood, of U.S.A., is an anæmia of secondary form without leucocytosis. In this anæmia, which is accompanied by an enormously enlarged spleen, hæmorrhages from the stomach and bowel are common, usually at intervals of some months. There is ascites even without cirrhosis of the liver, and there is often pigmentation of the skin. As the disease progresses there is emaciation, and the average duration is ½ to 3 years, as the cases usually end fatally. Pathologically the spleen shows atrophy and sclerosis of the Malpighian corpuscles. It may reach to the navel, and its enlargement may even precede the anæmia. As regards the blood, the red blood corpuscles average over 3,000,000 per c.mm., and the hæmoglobin is relatively low. The red cells are smaller than normal, and microcytes with a few poikilocytes are present. The leucocytes are generally unaffected in number and quality, but may even be diminished. *Post-mortem*—the spleen is firm and smooth, shows hæmorrhages and infarcts, and a great increase of fibrous trabeculæ, with atrophy of Malpighian corpuscles and disappearance of pulp. Splenectomy is advised, and has been often carried out successfully. The most usual causes of death in splenectomy are hæmorrhage and septic

peritonitis. If the spleen is never removed for leukæmia there are few other cases in which hæmorrhage is fatal, and careful asepsis should put away all chance of septic peritonitis. Often after removal of the spleen an increase in the size of the lymphatic glands, anæmia, high pulse and temperature occur. Spleenless people afterwards suffer no discomfort. This form of disease often needs careful consideration as to a diagnosis from splenic leukæmia, Hodgkin's disease with enlarged spleen, cirrhosis of the liver, malaria, and pernicious anæmia.

The case is recorded of a woman who, after rheumatic fever, took cold and suffered from what she called ague and from a swelling in the left side of the abdomen which filled it from the xiphoid cartilage to the pubes, and beyond the umbilicus. Asthenia and emaciation progressed, but there was no leucocytosis observed, and death took place three years afterwards. Another type runs a briefer course, with profound anæmia, fever, &c., and blood examination shows diminished red blood corpuscles with, perhaps, poikilocytosis.

(3) *Leukæmia.*[a]—(*a*) Spleno-medullary, (*b*) lymphatic.

Ehrlich thinks the part played by the spleen in spleno-medullary leukæmia is passive, and that the disease should therefore be called myelogenous leukæmia. It generally occurs in patients below forty years of age, who often give a history of malaria. The spleen is very much enlarged, painful and tender, gives fremitus on palpation, and occasionally a murmur may be heard over it. It may have adhesions round it, and may weigh from 2 to 18 ℔s. The pulse is rapid and soft, and hæmorrhages are common from all parts. There is often dyspnœa due to the anæmia, together commonly with fever, gastro-intestinal signs, ascites, priapism, and other symptoms of anæmia. The rules laid down by Ehrlich and Lazarus for the blood in myelogenous leukæmia are :—

(*a*) In addition to the polynuclear cells, mononuclear granular leucocytes (Ehrlich's myelocytes) are found in the blood.

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[a] Myelogenous Leukæmia and its Treatment. Dr. A. R. Parsons Transactions of the Royal Academy of Medicine in Ireland. Vol. XXIV. 1906. Page 121.

(*b*) That neutrophiles, eosinophiles, and mast cells contribute to the increase in white blood corpuscles.

(*c*) That dwarf forms of different kinds of white blood corpuscles are found.

(*d*) That there are invariably nucleated red blood corpuscles present, often in large numbers.

The white blood corpuscles average 300,000 per c.mm., and their ratio to red blood corpuscles is 1 : 10 or lower. There is a total increase of eosinophiles, and polynuclear leucocytes are often diminished. The myelocytes of Ehrlich are large mononuclear neutrophiles, and may average 30 per cent. of the white cells. The red blood corpuscles average up to 3,000,000 per c.mm., and the hæmoglobin about 42 per cent. The disease is generally fatal in from two to three years. I was fortunate enough to have the following case (which was under the care of Dr. A. R. Parsons in the Royal City of Dublin Hospital) under observation for some months, and to be able to make the majority of the blood counts which were made.

S. M'C., aged thirty-eight years, a wardsman in an asylum in the North of Ireland, was admitted to hospital on September 8, 1905, complaining of swelling of the abdomen, shortness of breath, palpitation of the heart and weakness.

Previous history.—Eight years before admission he had inflammation of the left kidney. Four years afterwards he got a cough, had expectoration, and pain in the lower part of the right chest, which, under hospital treatment, got better, but in a couple of years came on again, and he was informed he had phthisis.

Present illness.—About one and a half years before admission his abdomen began to swell, and he suffered from abdominal cramps, which were relieved by purgatives. The abdomen continued to increase in size, and he became more easily tired and more breathless.

On admission the patient presented a very sallow appearance, but the mucous membranes were not very markedly anæmic. There was great pulsation in the veins of the neck, but no swelling of glands. The chest was somewhat barrel-shaped, and the liver dulness did not begin till the seventh rib in the nipple line. On the left side there was dulness from the eighth rib down and over the base of each lung, behind there was crepitation. The circumference of the abdomen at the costal margin was 37 inches, and at the umbilicus 34½ inches. The whole of the left side was filled by a solid tumour, which extended 3 inches to the right of the umbilicus, and as low down as the anterior superior iliac spine, the whole mass being dull on percussion, the dulness beginning on the sixth rib in the axillary line. The edge of the swelling was firm, notched, and easily palpable through the abdominal wall, and there was no ascites. The liver dulness extended 1¼ inches below the costal margin in the nipple line, and the inguinal and femoral glands were slightly enlarged. There was no œdema of the lower extremities. The urine was acid, of sp. gr. 1025, containing indican and 6 per cent. of albumen.

Blood.—In the case of this patient the blood examinations were made on an average weekly throughout his six months' stay in hospital, and a short synopsis of these examinations is as follows :—

Red blood corpuscles.—These were 3,000,000 per c.mm. on admission, and during the first two months they slightly increased, subsequently falling to 1,840,000. From this time onwards a steady improvement took place, and before he left hospital they numbered 4,160,000. There were no abnormalities in their size or shape or staining properties, except that an occasional normoblast was found. Nucleated red blood corpuscles were frequently found, but always in small numbers. The hæmoglobin varied very much with the number of red blood corpuscles. On admission it was 55 per cent., but this fell to 42 per cent. in January, and after that steadily increased, till at his discharge it was 57 per cent.

White blood corpuscles.—Leucocytes showed remarkable alteration in numbers for the first few weeks, varying from 200,000 to 253,000, at one time giving a ratio of 1 : 11.7 erythrocytes. Then, during treatment, a drop from 207,000 to 67,000 took place quite suddenly within a month. A slight rebound ensued, but they then subsided to almost normal during his last few weeks in hospital.

Differential counts.—Polynuclear neutrophiles, which under normal circumstances should form 70 per cent. of the total leucocytes, had soon after his admission fallen to 20 per cent. From this time they started to rise, and within two months became almost normal, being quite so when he was discharged. Myelocytes (mononuclear neutrophiles) are the antecedents of the polynuclears, and are one of the chief features of myelæmia, being never found in normal circulating blood. These had a maximum of 60 per cent. in the blood when the polynuclears were lowest, and as the polynuclears increased to the normal these myelocytes diminished, being down to 7 per cent. when the patient left hospital. The mononuclear eosinophiles, with a few exceptions, were not found in the blood after the patient had been in hospital four weeks. The lymphocytes were lower than normal, only once rising to 22 per cent. Hyaline averaged about 10 per cent. The eosinophiles were high at first, and afterwards normal. Mast cells and nucleated red blood corpuscles were also found in small numbers. Taking two blood counts—one on September 22 and the other on March 12—the difference is striking:—

	Sept.	March.
Red blood corpuscles (per c.mm.)	3,070,000	4,160,000
White blood corpuscles	260,800	8,000
Ratio white to red blood cells	1 : 11.7	1 : 520
Myelocytes (neutrophiles)	159,088	560
,, (eosinophiles)	10,432	—
Polynuclears	52,160	5,680
Eosinophiles	—	80
Large hyaline	26,080	880
Lymphocytes	13,040	800

The only hæmorrhage which occurred was from the nose on one occasion, hæmorrhages in the skin and fundus oculi or mucous membranes being absent.

Another point of interest was that, especially at the beginning of the illness, the blood when withdrawn clotted very rapidly, and Lazarus noted the same in one of his cases, whereas the generally accepted theory is that blood coagulates less readily than normal.

Spleen.—The most interesting point of the case perhaps was the change the spleen underwent in size during the patient's stay in hospital. As already stated, on the patient's admission the spleen extended in a vertical direction from the sixth rib to the left anterior superior iliac spine, and horizontally was palpable 3 inches to the right of the umbilicus. A month later (October 21), the edge was only 1½ inches outside the umbilicus, and a month later the edge passed through the level of the umbilicus. About two months later it was fully one inch to the left of the umbilicus, and its lower margin was now only 2½ inches below the umbilicus, instead of extending below the line joining the anterior superior iliac spines. On March 13, that is about six months after his admission to hospital, the edge was 3½ inches to the left of the umbilicus, and the lower margin about one inch above the level. At times friction was audible over its surface. The lymphatic glands showed very little change during the six months, and no diminution in the size of the liver occurred. The only uncomfortable symptom felt by the patient was on one occasion when some slight obstruction occurred, due to perisplenitis. Soon after admission the costal margin of the abdomen measured 39 inches, and the umbilical 37½ inches; and on his discharge these measurements were reduced to 35½ inches and 34 inches respectively. Some slight œdema was present at times, and optic neuritis in the left eye. The temperature was generally normal, and never rose above 100.4°. The amount of albumen was reduced by $\frac{1}{10}$th during his stay—*i.e.*, from .6 to .06 per cent.

Treatment.—The patient was kept on ordinary hospital diet, with beef juice and eggs added, and he was kept in bed for the greater part of his illness. Citrate of iron with ammonia given in increasing doses: liq. arsenicalis in 2 minim doses, and afterwards the pil. phosphori, gr. i, followed by the pil. ferri. About three months after admission the X-ray treatment was commenced, the patient having a sitting every two or three days of fifteen minutes, the globe being 6 inches from the spleen. After a while dermatitis occurred, and so the treatment was temporarily stopped, but afterwards started again, the knees being exposed in addition. In all the number of sittings was thirty-five. The diminution in white blood corpuscles had commenced before the X-rays were applied, and so there is no definite proof that the X-rays altered the blood beneficially in reducing the white cells, and an examination of the hæmoglobin and red blood corpuscles brings us to the same conclusion. It is true the spleen diminished rapidly in size under the rays, but the subject of how far the X-ray treatment is beneficial in this respect is still open to question. After leaving hospital the patient continued in splendid health, the spleen being barely palpable.

Cases of spleno-medullary leukæmia in children are uncommon, but an interesting example of it is reported from Bradford Infirmary. The spleen extended 1⅛ inches to the right of the umbilicus and down to the pubes. The hæmoglobin was 45 per cent., the red blood corpuscles were 2,260,000, and the white blood corpuscles 146,970 per c.mm., the latter, excluding myelocytes, 36 per cent., polynuclears 47 per cent., eosinophiles 5 per cent., lymphocytes 2 per cent., and mast cells 10 per cent.

(4) *Lymphatic Leukæmia.*—Before discussing this disease it may be stated that sometimes cases occur which partake of both the lymphatic and the spleno-medullary type. The anæmia may not be pronounced for a time, and the heart may be displaced upwards by the spleen. Distinction must be drawn between leukæmia and leucocytosis, which occurs normally after a meal in children and in pregnant women. It is always necessary in suspected cases to make a film preparation of the blood, as cases of mistake have otherwise often arisen—*e.g.*, that of a child who was thought to have splenic anæmia as it had a blood count of red blood corpuscles 3,500,000, and white blood corpuscles 44,000 per c.mm. On film examination, however, the leucocytes were seen to consist of typical marrow cells, and large eosinophile myelocytes were frequent.

In acute lymphatic leukæmia there may or may not be general glandular enlargement, and the leucocytosis may be extreme, or of only moderate extent, and the large lymphocyte is more common than the small. The leucocytosis is marked chiefly by preponderance of large uninucleated lymphocytes, the ordinary polynuclears being entirely absent in some cases. Normally, the leucocytes are derived from three sources—(1) spleen, (2) lymphoid tissue in body, (3) the marrow; so all these sources may be affected in leukæmia. The spleen in the acute form is often greatly enlarged. In chronic leukæmia there is always glandular enlargement and always extreme leucocytosis—approaching 100,000 per c.mm., the majority being small lymphocytes. The spleen is generally fairly enlarged.

A case of acute lymphatic leukæmia reported from the North Devon Hospital is interesting.

The patient was a girl, aged thirteen years, who complained of pain in the left side and calves. She looked anæmic and ill; her gums were swollen and bleeding, her spleen enlarged and tender, and she had enlarged glands all over her body. The spleen projected 3½ inches below the ribs, and the liver was also enlarged. Her blood count showed the red blood corpuscles about 3,000,000 and the white blood corpuscles 796,000 per c.mm., and the hæmoglobin was 60 per cent. A differential count of the leucocytes showed the polynuclears 1.6 per cent., small lymphocytes 11 per cent., large lymphocytes 87 per cent., and hyaline 1.4 per cent. There were no eosinophiles or mast cells. Under arsenic and the X-rays the patient for a while got better, but afterwards became very excitable, grew worse, and finally died about a week after admission. At the *post-mortem* the most important points to be noted were as follows:—The heart muscle was pale, with greyish clots in the cavities. The spleen weighed twenty-six ounces, was soft and ecchymosed in its upper part, and the whole pulp was densely infiltrated with lymphocytes. The thymus, which was persistent, was packed with lymphocytes, but the lymphatic glands, though large and soft, were internally not much different from normal. The kidney and liver cells were also densely infiltrated with lymphocytes. The cause of death was evidently hæmorrhages in the brain. The bone-marrow consisted almost entirely of large and small lymphocytes, with myelocytes, normoblasts, and a few giant cells.

The whole course of the disease was very rapid—about fourteen days—which is the point of interest about the case. The number of leucocytes, 800,000 per c.mm., was enormous, but cases have been reported where they were over 1,000,000. Melland, in his paper on the *rôle* of the lymphocyte, states that the large lymphocytes found in lymphatic leukæmia are not true lymphocytes, but retrograde, and a return to a more primitive and less differentiated form of cell, and that both spleno-medullary and lymphatic leukæmia are myelogenous. It is certain, from experiments, that these large lymphocytes are not normal to the blood, and their staining reaction and other tests separate them from these. It is a curious fact that in most cases of acute leukæmia the thymus is persistent.

In closing, a few words will be said as to the use of X-rays in the treatment of enlarged spleens. In the foregoing cases which have been described the value of X-ray treatment has been manifested, and though there are disadvantages, such as dermatitis and pigmentation, which may occur, causing discomfort and pain, the treatment is at least worth a trial. People argue that X-rays are non-bacteriocidal, which is probably true. Also, it is stated that too rapid diminution of the leucocytes is associated with toxin production and a high temperature, but this has not been produced in the cases before mentioned. It has been shown by experiment that it is advisable to discontinue the treatment when the leucocytes have attained normal limits, as the circulating blood may then be deprived of its leucocytes. In leukæmia the amount of uric acid excreted is in excess of the normal, and the X-ray treatment is still further thought to increase this, but the subject is still *sub judice.*

CEREBOS SALT.

There is no mystery about Cerebos Salt. It is simply salt to which has been added a definite proportion of phosphates. This addition serves two important ends—first, it prevents the salt from becoming wet and from caking; and, secondly, it adds substances of distinct dietetic importance. The added phosphates convert the deliquescent magnesium chloride present into dry magnesium phosphate, and so Cerebos Salt indefinitely preserves its fine, dry powdery state. It is therefore both a culinary and a dietetic improvement. We are sometimes asked by correspondents as to whether there is anything harmful in Cerebos Salt, the question having been prompted probably by the fact that in water it yields a turbid fluid due to insoluble phosphates of lime and magnesia. To this we can reply in the negative.—*Lancet*, March 16, 1907.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON DISEASES OF CHILDREN.

Aids to the Diagnosis and Treatment of Diseases of Children. By JOHN M'CAW, M.D. R.U.I.; L.R.C.P. Edin.; Physician to the Belfast Hospital for Sick Children. Third Edition. 1907. London: Baillière, Tindall & Cox. Pp. xiv and 383.

THIS edition of Dr. M'Caw's little volume is greatly improved. In 1899, when the second edition appeared, we suggested several points which have received careful attention in this issue. It has been well compiled, and forms a most useful little handbook. In a small volume it is difficult to be accurate and brief, but nevertheless sound guidance is given to the student. The arrangement of the book is better, and the headings of paragraphs and chapters are more clearly set forth. Many recent journals have been consulted, and modern thoughts and discoveries have in many instances been incorporated. Authorities and references have been fully given where possible. We have no hesitation in commending this little volume to the attention of students and practitioners.

Clinical Studies in the Treatment of the Nutritional Disorders of Infancy. By RALPH VINCENT, M.D., M.R.C.P.; Physician to the Infants' Hospital, London. London: Baillière, Tindall & Cox. 1906. Pp. 83.

THIS volume is a series of abstracts of cases of food disorders of infants treated by the method of "Percentage Feeding." It is a supplement to Dr. Vincent's book on "The Nutrition of the Infant" (2nd edition, 1904), and the methods of prescribing the milk mixtures are printed in detail. This plan of feeding, however, is not much used in the United Kingdom, having found little favour in these countries. The book is exclusively confined to food prescriptions, and no other clinical studies are recorded. The title is misleading.

Pediatrics. Vol. VII. of the Practical Medicine Series of the Year's Progress in Medicine. Edited by ISAAC ABT, M.D. Chicago. Series 1906. Pp. 266.

IN this volume the most important papers of the year have received notice. They are chiefly American contributions, but several British papers are alluded to. The volume is well edited, and very interesting summaries of the past year's work are given. The subjects are numerous, and divided conveniently into systems where the chief advances of this branch of medicine can be readily seen. The selection for this Year-book is a very practical record of the year's progress. It forms a most useful volume. The sole British Agents for the Series are Messrs. G. Gillies & Son, of Glasgow.

Reports of the Society for the Study of Disease in Children. Vol. VI. 1906. Edited by GEORGE CARPENTER, M.D. London: J. & A. Churchill.

THESE admirable reports continue to maintain their reputation. Inaugurated with the new century, this society has collected a large amount of most valuable clinical material on diseases of children. The exhibits and papers are clearly set forth in the smallest space, and in several instances discussions are reported fully. Among the most valuable contents this year may be mentioned several papers on splenomegaly and splenic anæmia; two or three on congenital pyloric stenosis; a special report on pleural effusions, contributed by several observers; and the Wightman Lecture on chronic appendicitis, by M.

Broca. Many others of interest are to be found. We have nothing but praise to offer to this Society and the Editor for the admirable and attractive volumes which are so well produced.

Bidrag til de Leukæmiske og Pseudoleukæmiske Hudaffektioners Klinik og Histiogenese. Af E. BRUUSGAARD. Kristiania: Steen 'ske Bogtrykkeri. 1907. Pp. 77. [Contribution to the Clinical History and Histogenesis of Leukæmic and Pseudoleukæmic Affections of the Skin.]

IN this interesting paper the author describes two cases of cutaneous leukæmia and one of pseudoleukæmia. The first of the two former cases has been already described by Dr. Rasch. The patient presented flattened symmetrical tumours situated in the skin of the face. In their early stage they were deeply situated in the skin and superficial part of the subcutaneous tissue. As they increased in size they pressed towards the surface, causing thinning of the epidermis. At first the colour was normal, but later the tumours became cyanotic or pale yellowish-brown. The surface was smooth; there was no desquamation, excoriation or ulceration. In many parts they presented fine varices. The principal tumours were situated in the eyelids, which were occupied on both sides by prominent, soft, irregular masses. An examination of the blood gave 3,450,000 red corpuscles; white globules, 48,000, of which 44 per cent. were lymphocytes and 19 per cent. polynuclear leucocytes.

The results of the histological examination of the tumours were interesting and important. The author agrees with Pinkus in holding that the tumours must be looked on as lymphadenoid growths of local origin, but differs from him in assigning an essential part in the morbid process to the connective tissue, while he finds it difficult to decide what is the part played by the preformed mononuclear lymphocytoid and leucocytoid cells. He thinks, however, that they participate in the formation of the lymphomata. This opinion is founded on the appearance seen in the early stages of the growths. An active proliferation is seen in the cells of the connective tissue of the corium and subcutaneous tissue, and a great number of plasma cells of different sizes and shapes are seen, together with transitional forms between the connective tissue cells and the plasma cells. In the latter karyokinetic figures are common. As the lymphocytes become more numerous the plasma cells disappear, so that in the fully developed tumour we find the uniform appearance of lymphocytes lodged in a fine reticulum, as described by Nikolau and Pinkus. Dr. Bruusgaard thinks it most probable that the lymphocytes are formed by proliferation from the plasma cells in the same way as the small lymphocytes of the lymphatic glands are formed from the large protoplasmic cells of Flemming's germinal centres.

The second case was that of a man who died in three months of an acute lymphatic leukæmia. He presented on the face, neck, chest and back a number of tumours, painless, closely situated, attaining in some cases the size of a pea, without discolouration, and deeply situated. Histologically they were found to consist of a lymphadenoid granulation tissue, formed chiefly of small lymphocytes, but presenting also a great number of plasma cells. These varied in appearance. Besides the typical and fully developed forms, different degenerated forms were seen corresponding to the atrophic plasma cells described by Unna. In many of the plasma cells mitoses were seen. The tumours were situated in the reticular part of the true skin and subcutaneous tissue, while at the level of the superficial horizontal vascular network of the former only a perivascular infiltration by cells was found. The collagenous bundles in the parts affected were rarefied, and both here and in the lymphatic glands there was a pronounced proliferation of the vascular endothelium. While in the lymphatic glands and the lymphomata of other organs the small lymphocytes predominated, the blood showed a lymphocytosis, due essentially to large mononuclear cells, with nuclei poor in chromatin, surrounded by a strongly basophile protoplasm. The white corpuscles were 130,000, of which 96 per cent. were mononuclear, 0.9 per cent. small lymphocytes, and 3 per cent.

polynuclear neutrophiles. The red corpuscles were 1,800,000. The bone marrow was not examined.

The pseudoleukæmic case was that of a labourer, forty-nine years of age, whose body was covered by an eruption of papules and nodosities, deeply situated in the skin, of a bluish colour, and varying in size from that of a hemp seed to that of a pea. The older tumours often had in the centre a scab stained with blood. Besides these, on the trunk and extremities there were more recent nodosities, more or less voluminous, well defined, deeply situated, and having on their surface a fine network of dilated vessels. They resembled hard "pomphi." There was a general and violent itching. All the accessible lymphatic glands were greatly enlarged. There was no swelling of the spleen. The examination of the blood gave red corpuscles 4,180,000; white 22,300; of these 48 per cent. were polynuclears, 40 per cent. mononuclears (of which large and small lymphocytes were in nearly equal numbers), and 12 per cent. of polynuclear eosinophiles. Later on the white corpuscles diminished in number, while the large mononuclears and the eosinophiles underwent a relative increase.

The case was observed for two and a half years, during which time the condition did not undergo much change. Arsenic and Röntgen rays were tried without effect. Clinically the case agrees with the cutaneous pseudoleukæmia of Josef Wagner, and resembles closely the prurigo lymphatica of Pinkus and others. This latter diagnosis is that which suits it best, particularly as it was not possible to examine histologically the lymphatic glands. In the skin nodules a perivascular infiltration was found, chiefly in the reticular portion of the skin. The infiltration consisted principally of lymphocytes, eosinophiles, and polynuclear neutrophiles. There was also a considerable proliferation of the connective tissue cells, and of the endothelial cells. The infiltration of lymphocytoid cells lodged in a fine reticulum of connective tissue presented a striking similarity to lymphatic tissue. In the pomphi the inflammatory appearances were more marked, and accompanied by an abundant migration of polynuclear leucocytes. These pomphi, as well as the nodosities, must, therefore, be looked on as direct symptoms of the disease.

The paper, to which a summary in French is appended, is illustrated by five well-executed plates, most of them in colour, showing the eruption in the pseudoleukæmic case, and the microscopic appearances of the skin tumours in both the leukæmic and pseudoleukæmic cases.

The Diagnosis and Treatment of Intussusception. By CHARLES P. B. CLUBBE, Hon. Surgeon to the Royal Prince Alfred Hospital; Hon. Surgeon to the Royal Alexandra Hospital for Children, Sydney; Joint Lecturer in Clinical Surgery at the Sydney University. Edinburgh and London: Young J. Pentland. 1907. Pp. 92.

THIS little book is based entirely upon the author's personal experience of thirteen years, and as such is of considerable interest. If it only emphasised the importance and frequency of the condition it would justify its production. The condition is one which we have felt is far more frequent than is for a moment considered to be the case. In fact we know of some surgeons who look upon a case of intussusception as a rarity one meets with but a few times in a life time instead of being, as it unquestionably in our opinion and experience is, the cause of at least one-third of all cases of acute intestinal obstruction, and we have no hesitation in stating that numbers of children die yearly, and the cause of death is certified to be "diarrhœa," "dysentery," or "convulsions," rather than intussusception.

In the thirteen years within which Mr. Clubbe's experience of this condition was gained he treated no less than 144 cases, and we know of no reason why intussusception should be of more frequent occurrence in children at the Antipodes than in Dublin, yet we venture to think that scarcely anything approaching so many cases have been treated in as many years by several surgeons in Dublin.

With respect to the author's experience there is but one point to which we would take exception, and it is his advocacy of its treatment by irrigation or injection (hydrostatic pressure).

He acknowledges he has been successful in only 14 cases out of 138 in which he tried it, while he also states the objections to its use, the chief of which is that one cannot be certain whether the reduction is complete until a period of five or six hours after it has seemed to have effected reduction, a period which may make a vast difference in the result of operative interference in case it is found that reduction has not been effected. It is a line of treatment we would most unhesitatingly condemn in the strongest possible terms, and we feel assured if the condition were recognised early—and we know of no reason, unless gross and culpable ignorance or carelessness, why it should not be recognised within a few hours—and immediate operation performed by a competent surgeon—not one who may consider himself competent, which is a different matter—the mortality should be reduced to less than 10 per cent. instead of being, as it is all round, somewhere about 35 to 40 per cent., a state of things which is simply appalling and truly disgraceful.

We can commend the monograph to the perusal of all practitioners, especially general practitioners and those who consider themselves specially fitted to diagnosticate and treat children's diseases.

Tumours, Innocent and Malignant: Their Clinical Characters and Appropriate Treatment. By J. Bland Sutton, F.R.C.S.; Surgeon to and Member of the Cancer Investigation Committee of the Middlesex Hospital, &c. Fourth Edition. With 355 Engravings. Cassell & Co. 1906. Pp. 675.

Though but three years have elapsed since we reviewed the third edition of this work, a considerable amount of work has been done, and much that is now required to be incorporated in the edition before us. The new chapters are—one on tumours arising from the chorionic villi chorion-epithelioma (deciduoma), and one concerning the cause of cancer, in which the various theories are set forth, but, unfortunately, without arriving any nearer at a definite conclusion as to the actual cause of the malady. To the sections devoted to the tumours of the testicle and ovary much new matter has been added, but, indeed, everything of importance that has come to light in connection with the subject of tumours generally has been included. Full justice has been done to Sampson Handley's work in connection with the dissemination of breast cancer by the process he describes as "lymphatic permeation," in which the growth of cancerous cells along the lymph vessels takes place just as readily against the lymph stream as with it, the spread taking place in a centrifugal manner from the site of primary growth.

It is unnecessary for us to say more of this work, which is so well known, and which is unquestionably the best and most authoritative on this important subject in the English language.

A Text-book of Genito-Urinary Diseases, including Functional Sexual Disorders in Man. By DR. LEOPOLD CASPER, Professor in the University of Berlin. Translated and Edited with Additions by CHARLES W. BONNEY, B.L., M.D.; Assistant Demonstrator of Anatomy, Jefferson Medical College; Surgeon to the Southern Dispensary, Philadelphia. With 213 Illustrations and 23 full-page Plates, of which 7 are in colours. London: Rebman, Ltd. 1906. Pp. 618.

THE author of the treatise before us is a well-known worker and recognised authority on genito-urinary disease. In conjunction with Dr. Paul Friedrich Richter some three years ago he produced an eminently practical manual entitled the "Functional Diagnosis of the Kidney," which we had the pleasure of reviewing in this journal. The appearance of a volume from his pen on the larger subject of genito-urinary disease was only to be expected considering his vast experience in this branch of surgery.

In the volume before us, as in the manual above mentioned, one sees the same enthusiasm and charm running through every page. The book is divided into two sections—a general and a special. The former comprises some 70 pages, and deals with the examination of the patient; the anatomy and physiology of the genito-urinary treat; the physical methods of examination and the physical, chemical, and microscopic examination of the urine. In the special section he takes up the various diseased conditions *seriatim*. One has but to read a few pages of the work to see that it is the product of a thoroughly practical surgeon whose originality and experience are evident in every section. The translator of the edition before us has assisted in writing the section devoted to the radical operations of hypertrophied prostate. This chapter is extensively illustrated by numerous full-page plates. Young's operation of perineal prostatectomy is illustrated by four figures and three-full page plates. The other full-page plates illustrate the method of suprapubic prostatectomy, and are taken from Deaver's work. The passage of sutures through the edges of the cut mucous membrane in the floor of the bladder, as illustrated in Plate V., is a procedure which is not carried out in this country. We can confidently recommend the treatise as one of the soundest and best we have read in connection with this important subject. The translation is well done, and reads smoothly and pleasantly.

The Immediate Care of the Injured. By ALBERT S. MORROW, A.B., M.D.; Attending Surgeon to the Workhouse Hospital and to the New York City Home for the Aged and Infirm; Assistant Attending Surgeon to the Manhattan Maternity Hospital. Fully Illustrated. W. B. Saunders & Co. 1906. Pp. 340.

THIS is a text-book on "First-Aid." The contents are divided in three parts. The first part gives a succinct description of the anatomy and physiology of the human body. The second gives an account of the various bandages, dressings, and practical remedies to be employed; while the third part is devoted to accidents and emergencies, such as hæmorrhage, burns and scalds, fractures, asphyxia, unconsciousness, poisoning and its treatment, concluding with a chapter on "the transportation of the injured."

It is a book which would be found of service to a junior nurse and to those attending a course of instruction on "First-Aid."

On Retro-Peritoneal Hernia. Being the "Arris and Gale" Lectures on the Anatomy and Surgery of the Peritoneal Fossæ, delivered at the Royal College of Surgeons of England in 1897. By B. G. A. MOYNIHAN, M.S., F.R.C.S. Second Edition, revised and in part re-written by the AUTHOR and J. F. DOBSON, M.S., F.R.C.S. London: Baillière, Tindall & Cox. 1906. Pp. 195.

IT is not necessary for us to do more than mention that this authoritative work on an interesting and hitherto by no means well-understood subject has been thoroughly revised since the delivery of the lectures by the Author just ten years ago. In the revision advantages have been taken of the anatomical work that has been done in the interval, while any new cases that were reported of this somewhat rare condition have been incorporated.

The work is a reference one which the general surgeon cannot afford to be without.

Indications for Operation in Disease of the Internal Organs. By PROFESSOR HERMANN SCHLESINGER, M.D.; Extraordinary Professor of Medicine in the University of Vienna. Authorised translation by KEITH W. MONSARRAT, M.B., F.R.C.S. Ed.; Surgeon to the Northern Hospital, Liverpool. Bristol: John Wright & Co. 1906. Pp. 498.

THIS manual is a novel and by no means unwelcome one, having regard to the great frequency with which the aid of surgery is invoked at present. To the general practitioner the book should prove an immense boon, as it is very concise, and yet covers the entire domain of internal disease in which surgery may at any time be required.

On each section there appears a short ætiology and a concise pathological description; the clinical course is clearly detailed, and the general and differential diagnosis accurately drawn. Then follow the indications for operation, the contra-indications, and a few remarks upon the prognosis with and without operation, as well as a statement of the risks of the operation itself. The author shows that his work is founded upon vast practical experience, and his opinions are impartially stated. The book leaves nothing to be desired, and we strongly recommend it to every general practitioner and recently qualified man. To Mr. Monsarrat is due a word of thanks for placing such a valuable work in the hands of those who cannot read the original, and a word of praise for the manner in which he has accomplished the work of translation, which is free from that unpleasantness one too often finds in translations from the German.

Hypnotism and Suggestion: A Practical Handbook. By EDWIN ASH, M.B., B.S. Lond.; M.R.C.S. Eng.; sometime Demonstrator of Physiology in St. Mary's Hospital Medical School, and Lecturer on Physiology to the South-Western Polytechnic; late House Physician and Resident Anæsthetist to St. Mary's Hospital, Paddington; Cheadle Gold Medallist, &c., &c. London: J. Jacobs. 1906.

As the author informs us in his preface, the object of the present volume is "to explain the technique of experimental hypnotism and suggestive therapeutics"; and we must add, before proceeding further, that he has adhered very consistently and faithfully to his selected programme. The motto adopted must be admitted by all to be a most appropriate one; both friends and foes of hypnotism must agree, we think, that its selection was most happily inspired: "Will not that be a thing worthy of doing; to deliver ourselves from quacks—sham heroes; to deliver the whole world more and more from such?" The author has, we must say, very diligently—and we may add, in our opinion, very successfully—"endeavoured to divest the subject of the air of mystery and secrecy with which it is popularly invested, and to show that by careful attention to certain practical rules the phenomena of hypnosis can be investigated by any intelligent person." He explains away much of the verbal mystery which has so copiously draped the terminology and its special associations: he then proceeds to take in hands the phrase by which Bernheim proposed to indicate the condition of hypnosis as "a state of exalted suggestibility"; and, having so far made his path straight, the author goes on to examine hypotheses. The most satisfactory hypotheses which have hitherto been advanced in this connection are those "based either on the theory of dual consciousness or on the principles involved in the mental mechanism of attention." He discusses—very favourably—*Supraliminal Mind*, and its complement, the *Subliminal Mind*: the mental quality which "has been very strongly insisted on by a great number of investigators, and supported by a vast amount of evidence collected by the late F. W. Myers." The leading phenomena of attention are considered in turn; and the author states his belief that: "In the fixation of attention we have, I am convinced, the key to the problems of hypnosis." "Sub-conscious thought" and "Auto-suggestion" receive their share of intelligent discussion; and the existence of "specific personal influence is made to account for a wide range of wonderful cures—extending from *Biblical* (and medical) *miracles* down to *rheumatic rings*."

The author proceeds in his second chapter to the "Methods of inducing Hypnosis," of which he gives a clear and concise account—among the very best we have met with. Succeeding chapters give the various classes and types of phenomena. The appendix discusses "The Induction of Hypnosis," "The Use of Passes," "The Stages of Hypnosis," and "The Induction of Hypnosis by Drugs." His language is always lucid; and we may confidently refer the reader to this small volume as one of the best summaries of its subject. We designedly refrain from any attempt to influence the reader's general opinion on the matter of hypnotism: life is too short for exertion which our multiplex experience has persuaded us to be wastefully applied in the case of so *subjective* a subject of discussion as this present.

Guy's Hospital Reports. Vol. LX. London: J. & A. Chambers. 1906. Pp. xxxvi + 378.

This volume contains a number of valuable and interesting papers. "Life and Mechanism," by Dr. Haldane, is a useful summing-up of present day working hypotheses to interpret the accumulative observations and experiments on physiology; it shows how the mechanistic theory is being replaced by a return to a modified vitalism, depending not on "vital force," but on cell nutrition and cell metabolism. "The Fate of the Ovum and Graafian Folicle in Præ-menstrual Life," by Dr. Stevens, has considerable biological interest. He shows that they mature by a constant, well-marked series of changes, but that the ovum never reaches the same size as that of an adult female, and that it is usually removed by a kind of phagocytosis, but may undergo simple necrobiosis.

Dr. Philip Turner, writing on "Meckel's Diverticulum and its Pathology," mentions that it exists in over 2 per cent. of all human bodies, being much more frequent in males. A. F. Hertz, M.B., recommends for œdema a liberal mixed diet as poor in chloride of sodium as possible.

The Bacteriological Examination of Water Supplies. By William G. Savage, B.Sc., M.D., D.P.H., M.O.H. and Public Analyst, Colchester, &c. London: H. K. Lewis. 1906.

As the writer points out in his preface, "the bacteriological examination of water has passed through several phases. At first it was hailed as a direct certain method by which to test the purity of a water; then it lost credit, as limitations to its use (based on insufficient knowledge) were met with. Now, owing to the prolonged labours of many observers (largely English and American), it is taking its rightful place as the most valuable of all available methods by which to judge the purity of a water-supply. . . . The bacteriological examination of water has been established on a scientific basis of ascertained fact." Such being unquestionably the case, the need for a short, handy manual stating the precise information required now-a-days from a bacteriological analysis of a water sample, and the best and most up-to-date methods by which that information can be obtained, must necessarily be of great value to all concerned in public health work. Especially valuable will such a manual be if it is based upon the results of a wide personal experience, gained not from the repetition of analyses upon routine or conventional lines, but rather from the comparative study of various methods of procedure, as applied to large series of carefully selected objects. If, in addition, the writer of such a book commands a lucid style of exposition, a wide acquaintance with the literature of his subject, and is devoid of any undue leaning towards one particular way of interpreting facts—in other words, if he is free from " fads "—then his work may be said to present a maximum of utility. And this is just the sort of work for which we are indebted to Dr. Savage. We venture to think that, for a considerable time, his little book will be indispensable to the water analyst who avails himself of bacteriological methods—and what analyst can now afford to dispense with them ?

Very little in the way of criticism is really called for. Occasional omissions, no doubt, there are. One could wish to know, for example, how the writer tests for *indol*. Perhaps this does not enter into Dr. Savage's plan, as being a matter of general rather than of special bacteriological technique; but, in our own experience, much depends on the selection and precise strength of the acid used, as well as on the temperature, and seeing that precise directions are given for testing each of the other characters of *B. coli*, it might have been well to do the same for the demonstration of indol, and perhaps to have included the new dimethyl-amidobenzaldehyde reaction for that substance. In support of what has just been said, we have ourselves observed strains of typhoid which, on being tested in a special way, yielded a faint but undoubted nitroso-indol reaction. There are occasional obscurities. For example, "Metchnikoff's vibrio does not give Pfeiffer's test when a high-grade *cholera* serum is used, but the serum of animals that have been treated with this vibrio possesses bactericidal properties for that organism" (p. 123).

Turning aside from criticism, for which, after all, there is little need, we may conclude this notice by referring to the way in which Dr. Savage treats of what is undoubtedly the most difficult task with which the water bacteriologist is liable to be confronted—viz., the isolation of the typhoid bacillus from a sample of drinking water suspected of containing it. This task he divides into three parts—viz., first, the obtaining (whether by concentration or enrichment) the bacilli in a quantity of water small enough to be plated; secondly, the isolation of the bacillus in pure culture; and thirdly, the tests necessary to establish its complete identity.

In regard to the first part, the author considers (*a*) concentration by filtration, and rejects it; (*b*) chemical precipitation, describing Vallet and Schüder's sodium hyposulphite and lead acetate methods, Ficker's ferrous sulphate, Willson's alum, and Müller's *liq. ferri oxychlorati*. With reference to this last plan, we may say that by using it in conjunction with Drigalski plates we were able to isolate the typhoid bacillus from two litres of tap water to which *one loopful* of broth culture had been added. (*c*) Precipitating the bacillus with anti-typhoid serum. (*d*) Enrichment methods, of which the use of caffein, which appears to check the growth of *B. coli* whilst permitting that of typhoid, is the most important. We were not so successful with this, and some of the more recent reports as to its value are the reverse of encouraging. (*e*) Drigalski's plan of simply letting the water stand in uncovered cans and pipetting small quantities from the surface for culture on the C. D. medium has the merit of simplicity; but is it very efficient? (*f*) Lastly, Cambier's idea of employing the quicker rate at which the motile typhoid germ works its way through the pores of a Pasteur filter is mentioned, though not recommended, an attitude in which we heartily acquiesce.

For the second part of the task, the various plating media that have been specially devised are fully described—the now universally employed "C. D." (Conradi-Drigalski) agar, Endo's fuchsin agar with Gaehtgen's modification, and the malachite green media of Lentz and Loeffler. *Endo* has proved invaluable in our own hands for dealing with bacilli of the dysentery group in their relation to *B. coli* on the one hand, and typhoid on the other, and we could have wished that Dr. Savage had seen his way to add to his description of it the hearty recommendation which it undoubtedly merits.

From the foregoing it will be seen that the author keeps abreast of recent literature, and, in conclusion, he may be heartily congratulated on having added a really useful book to the laboratory shelf.

E. J. MCWEENEY.

Lectures on Massage and Electricity in the Treatment of Disease. By THOMAS STRETCH DOWSE, M.D. Abd.; F.R.C.P. Ed.; formerly Physician Superintendent Central London Sick Asylum; President North London Medical Society; Member of Council and Secretary for Foreign Correspondence, Medical Society of London; Physician to the North London Hospital for Consumption and Diseases of the Chest, to the North-West London Hospital, and to the West-End Hospital for Epilepsy and Diseases of the Nervous System; Associate Member of the Neurological Society of New York, &c. Sixth Edition, Revised. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1906.

THE position of this volume in the domain of medical literature is indicated by the author in the opening sentence of his preface, and with a degree of precision which cannot be successfully impugned by the most unsympathetic reviewer:—"This book has now reached the sixth edition; the author, therefore, concludes that these lectures have a justifiable place in the literature of this country." And he points with an honest pride to the change which has been effected in the interval in the critical utterances of the self-elected inquisitors and censors of the profession:—"When massage was introduced into this country many years ago by myself and a few other physicians, the practice was denounced as heterodox, uncanonical, and unprofessional. But now a vast change has come over the nebulous dreamings of these exalted and exclusive philosophic spirits. They are being swept away in every direction by the never-ending advance of new discoveries and new methods." Truly and manfully spoken! And so it has been, and so it is—in other departments—at the present moment, and so it (more than probably) will always continue to be, till human nature becomes re-elevated by a process of regeneration, and the reign of the bacteria has reached the status of an item of antiquated pathological history. Massage has come to stay; despite the scoffs and sneers and innuendoes of that innumerable host of critics, whose existence had always proved so inextricable a puzzle to those who would like to believe that this world is really guided and governed by a truly benevolent and beneficent Providence. And its unrivalled antiquity would also seem to have escaped the critical cogitations of those opponents to the improvement of human comfort, and the relief of physical pain and mental torture. Most assuredly, massage is the oldest of all surgical procedures—the earliest of all anodynes to physical pain and discomfort.

To ascertain the *raison d'être* of such practice the reader may consult the well-filled pages of Dr. Dowse's volume. The co-opted practice of medical electricity is treated with corresponding fulness. It is quite superfluous to express the closing wish—which we cordially

feel—for the success of this text-book. This is thoroughly well assured by its previous history.

Climatotherapy and Balneology. The Climates and Mineral Water Health Resorts (Spas) of Europe and North Africa, including the General Principles of Climatotherapy and Balneotherapy, and Hints as to the Employment of various Physical and Dietetic Methods. By SIR HERMANN WEBER, M.D., F.R.C.P., Consulting Physician to the German Hospital, London; the Royal National Hospital for Consumption, Ventnor; and the Mount Vernon Hospital for Diseases of the Chest, Hampstead; Hon. President of the British Balneological and Climatological Society; Hon. Member of the American Climatological Association; Hon. Member of the International Anti-Tuberculosis Association (Berlin); Corresponding Member of the Balneological Society of Berlin, &c.; and F. PARKES WEBER, M.D., F.R.C.P.; Physician to the German Hospital, London; and to the Mount Vernon Hospital for Diseases of the Chest, Hampstead; Member of the British Balneological and Climatological Society; &c.

THE handsome volume before us constitutes the third edition of "The Mineral Waters and Health Resorts of Europe," enlarged and extended. It consists of three parts, each of which in a sense is a separate work, and in consequence of this there is some unavoidable overlapping. Part I. is concerned with Medical Climatology and a description of the Climatic Health Resorts of Europe and North Africa, together with a chapter on Ocean Climates and Sea Voyages. Part II. deals with the general subjects of Hydrotherapy and Balneotherapy. In this portion of the work we find an extensive list of mineral water health resorts (spas.) Part III. is devoted to the selection of health resorts and therapeutic methods, and their various uses in different chronic diseases and morbid conditions.

The whole forms a wonderful record of research, compilation, and condensation. Its scope is so vast that the descriptions of many of the health resorts have suffered from the necessities of space, and the list of authorities quoted is so extensive that we are tempted to wish that it were completed by the inclusion of the names of some which have been omitted. However, we know of no work in which so conscientious an attempt has been made to render such lists comprehensive and accurate, and if alone for this fact the book will be a standard work of reference.

The portions of the work which deal with the climatology of Swiss resorts, the French and Italian Mediterranean Littoral, Sicily and the Nile are charming and instructive reading, and the whole book is replete with details, not only of well-known resorts, but also of very many which have but recently established their claim to recognition amongst physicians in this country.

The chapter in Part III. regarding the indications for treatment in tuberculosis is full of suggestions regarding the use and selection of climates and health resorts, and contains many hints regarding the physical and dietetic methods of dealing with these diseases.

We congratulate the authors on the production of this volume, which bears so much evidence of research and travel, and on the pains which they have taken to make the details set forth accurate and accessible.

Text-book of Comparative General Pathology for Practitioners and Students of Veterinary Medicine. By PROFESSOR DR. TH. KITT, of Munich. Authorised Translation. By DR. WILLIAM W. CADBURY and DR. ALLEN J. SMITH. London: Baillière, Tindall & Cox. 1906. Pp. 464.

THIS handsome volume is intended to supply a want long felt by veterinary students, and felt more acutely as Veterinary Medicine becomes more scientific. Hitherto the students of this science have had to depend on works on human pathology, only a very few books, such as the text-book of Birch

Hirschfeld, containing portions dealing with the diseases of animals, and even this work dealing only with pathological anatomy and not with general pathology. Professor Kitt's work will therefore receive a general welcome from the members of the veterinary profession, and the excellent translation by Drs. Cadbury and Smith, the former Assistant, the latter Professor of Pathology in the University of Pennsylvania, will doubtless enjoy a cordial reception in English-speaking countries. We may, perhaps, hope that the reception will be such as to encourage Dr. Cadbury to undertake the translation of Professor Kitt's other works—the "Lehrbuch der patholog. Anatomie der Hausthiere" and the "Lehrbuch der Bacterienkunde und patholog. Mikroskopie."

In the volume before us we find such subjects treated as immunity and the protective mechanisms of the body; congenital disease; causes of disease; course and terminations of disease; disturbances of circulation; of metabolism, including the different kinds of degenerative change; processes of repair and of new formation, under which we find inflammation, tuberculosis, glanders, actinomycosis and tumours; and functional disturbances of the different systems. The descriptions are well given, and the whole work, although, of course, largely and admittedly a compilation, must be looked on as a valuable contribution to medical literature. There is a great deal in it which the human pathologist may read with advantage, and no pathological laboratory can afford to leave its library without it. The translation seems to be quite above the average of American work of that kind. The book is well brought out, splendidly illustrated, not only by 131 figures in the text, but by four well-executed coloured plates; and there is a good index. It is one to be much commended to all pathologists, and particularly to students of that science.

Catalogue of the Pathological Museum of the University of Manchester. By J. LORRAIN SMITH, M.A., M.Sc., M.D. Manchester: The University Press. 1906.

THIS handsome volume, which makes No. XV. of the

Manchester University Publications, reflects the greatest credit on Professor Lorrain Smith and on those who assisted him in its preparation. In the work advantage was taken of the previous labours of Professors Dreschfeld and Delépine, and the catalogue now includes an account of all the specimens in the museum up to the end of March, 1906.

The arrangement is at first sight rather complicated, but in reality very simple and effective. The decimal system introduced by Dr. Abbott, of Montreal, is employed with some modification. Two schedules are given at the beginning of the volume—one anatomical, the other pathological. To the description of each specimen numbers are affixed referring to these schedules. This makes it unnecessary to number the pages, and makes it easy to incorporate in the future the descriptions of specimens added to the museum. The volume, too, is bound in such a way that the sheets come asunder, so as to allow of the insertion of additional pages whenever necessary. "The decimal numbers are merely descriptive. The *anatomical* description of the specimen is indicated by the numbers in front of the colon, and the nature of the *pathological* lesion or lesions illustrated is given by the numbers following the colon. In addition to these, each specimen, which is fully described, has three other numbers :—(1) The museum number (M.N.), which indicates the individual preparation as it is entered in the continuous record of the specimens ; (2) the number in the day book (D.B.), which refers to the rough record of all the specimens which come into the department ; (3) the autopsy number (P.M.M. or S.), which gives the reference to the records of the Pathological Department of the Royal Infirmary. A card catalogue has been drawn up on the basis of the descriptive numbers, and gives ready means of finding specimens, either by the anatomical or by the pathological numbers."

In illustration we may take, at random, an example :—Heart—Hypertrophy—Dilatation, and Fatty Degeneration (Alcoholism). Then follows the description of the specimen. Above the title on the left hand side are the museum number, 2811 ; the day book number, 4024 ; the autopsy number, 355 ;

and the date, December 10, 1903, together with the name of the donor of the specimen, Dr. Graham Steell. On the right hand side are the numbers 12 : 62 . 1 (87.1). Number 12 in

12 : 42 . 2

the anatomical classification indicates heart; 62 in the pathological classification indicates hypertrophy; while the decimal 1, under hypertrophy, signifies dilatation. In the same way 12 : 42 . 2 indicates degeneration of fatty nature—the other kinds of degeneration being indicated in the schedule under other decimal numbers, as .1 cloudy swelling, .5 amyloid, .7 colloid, and so on—while 87.1 indicates diseases due to poisons of extraneous origin, alcohol—the other poisons being .2 lead, .3 phosphorus, .4 arsenic, .5 mercury.

The preparation of the catalogue has occupied the whole staff of the department since November, 1904, and is in every way a fine and creditable work.

LITERARY NOTE.

DR. J. S. MILNE has now completed a long monograph on "Surgical Instruments in Greek and Roman Times," which will be issued from the Oxford University Press within a few days. No clear conception of a surgical operation, ancient or modern, can be formed from a written description without some previous knowledge of the instruments, and the author points out that many interesting operations described in detail in the clinical authors are rendered obscure or quite unintelligible from lack of such knowledge. No systematic attempt to reconstruct the different instruments used by the Ancients has hitherto been made, this department of Archæology having received scant attention. Dr. Milne's work, which embodies investigations extending over several years, is illustrated.

PART III.

MEDICAL MISCELLANY.

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Reports, Transactions, and Scientific Intelligence.

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ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. Magee Finny, M.D., F.R.C.P.I.
General Secretary—James Craig, M.D., F.R.C.P.I.

SECTION OF PATHOLOGY.

President—J. F. O'Carroll, M.D., F.R.C.P.I.
Sectional Secretary—Professor A. H. White, F.R.C.S.I.

Friday, February 15, 1907.

The President in the Chair.

Urinary Tuberculosis.

Dr. L. G. Gunn exhibited a specimen taken from a man of about forty-five years of age, who had been admitted to hospital with the usual symptoms of urinary tuberculosis. As far as they could diagnosticate, he had a large right kidney, from which it was thought the pus in the urine was probably proceeding. The bladder was small, contracted, and tubercular. A cryoscopic examination led to the conclusion that the patient was on the borderland of insufficiency, and the right kidney was thought to be a bag of tuberculous pus. On operating, a large kidney was found having a great deal of apparently healthy tissue in it. On exploring the pelvis of the kidney, tuberculosis was found present. He presumed he had been wrong in thinking the other kidney healthy; he therefore did not take the kidney out. The patient died two days afterwards, and the *post-mortem* showed that the cause of death was extensive miliary tuberculosis affecting the liver, lung and spleen. The other kidney was a tiny structure, apparently congenitally small, but perfectly healthy, though incapable of sustaining life. The primary tuberculous focus was a small chronic abscess in the prostate.

The Chairman said the fundamental interest in the case was the difficulty of making out whether one or other or both kidneys were involved. For many years attempts had been made to settle the matter. An observer had stated that the mere palpation of a healthy kidney was sufficient to produce some degree of albuminuria; a larger amount was produced if the kidney had been damaged previously; but if it were an utterly insufficient thing like a tuberculous mass it did not produce any. If that were established, it might give them a further and pretty commonplace test for which of the two kidneys was involved.

Professor McWeeney said the large kidney was a beautiful specimen of compensatory hypertrophy; the other was the smallest he had ever seen which bore no evidence of organic disease.

Mr. Gunn replied.

(1) *Liver with Cirrhosis and Carcinoma;* (2) *A Case of Lymphatism.*

Dr. A. R. Parsons showed specimens of above. The first was the liver of a woman, forty-two years of age, who had been admitted to hospital in November last complaining of considerable swelling of the abdomen and also of the legs. The swelling of the abdomen, which had commenced three months previously, had not interfered with her until some six weeks before admission. Her previous history threw practically no light on the nature of the swelling, excepting in the one point that had a slight bearing on it—viz., that five years previously she had had a slight attack of hæmorrhoids. She was the mother of twelve children, of whom six had died in infancy. She was rather a sallow woman, but not jaundiced. Opinion differed on the *ante-mortem* diagnosis as to whether the condition was malignant; he held the view that it was cirrhosis, basing his opinion on the facts that the patient gave an ill-defined history of alcoholism; the liver was uniformly enlarged; the spleen was considerably enlarged; there was a history of hæmorrhoids; and the fluid obtained on tapping was clear and non-sanguineous. On the other hand, the rapid emaciation and short history of the case were supposed to suggest malignant disease. No primary focus could be palpated in any part of the abdomen. She vomited, but no hydrochloric acid was present. There was no symptom to suggest primary disease of the stomach. On opening the abdomen after death they found the liver considerably enlarged, and it was perfectly manifest she had malignant disease of the liver. It was equally certain she had advanced cirrhosis of the liver, usually attributed to alcoholism. A careful examination was made of the stomach, pancreas, intestines, uterus and ovaries; there was no evidence whatever of primary malignant growth in these organs, and the naked eye appearance of the liver, and the microscopic sections, showed that the growth was primary in the liver. There were secondary nodules in the lung. The case represented an unusual combination of primary malignant disease and advanced cirrhosis of the liver.

Dr. A. R. Parsons, in presenting his second specimen, said that in 1892 he had met with several cases of sudden death in children from one to five years of age, in which the only abnormal *post-mortem* appearance was great enlargement of the adenoid tissue of the intestines. Dr. Peacocke had described two or three cases which were identical with his own cases, and referred to a valuable paper by Dr. Ewing, of New York, who, following Paltauf, called the condition lymphatism. The cases were characterised by sudden death, frequently—but not always—preceded by convulsions; and the *post-mortem* revealed nothing sufficient to account for death. In the cases which he (Dr. Parsons) had met, he noted considerable enlargement of the solitary follicles and Peyer's patches; considerable enlargement of the mesenteric glands; the spleen was slightly enlarged, and a section of it showed some enlargement of the Malpighian bodies. Dr. Peacocke observed in his cases extreme enlargement of the thymus gland. Since Dr. Peacocke observed his cases no others had been reported in Dublin, and there was little information available in English literature. It was not until recently that he had had an opportunity of seeing another case of lymphatism. This was a child of seven months. He was perfectly well until one Saturday; he was brought to hospital next day (Sunday) at 12 30, and died at two o'clock. Simultaneously he (Dr. Parsons) had a child in hospital suffering from pneumonia. He was the same age as the other child. The viscera of both children formed a striking contrast. In the one the thymus gland was in its presumably normal condition; in the other there was an enormous enlargement covering quite a large part of the heart. It was, he thought, quite possible that a large number of cases succumbed to the condition of lymphatism, and not to convulsions.

Dr. Pringle and **Dr. Farnan** cited similar cases.

Dr. Peacocke said that when he was observing his cases he was anxious to get comparisons similar to what Dr. Parsons had got, as he felt that exaggeration was possible. He had never found any enlargement of the external lymphatic glands. He had, however, found a slight patch of congestion at the base of one or both lungs, although there was no evidence of their being anything wrong before, except a slight cold. He was sure a great many cases occurred which were ascribed to convulsions, which, however, was only a symptom of disease—not a disease itself.

Dr. McWeeney recalled a case similar to Dr. Parsons' first exhibit. As regards the subject of lymphatism, he did not think they had good scientific proof that death was due to the lymphatic condition.

Dr. Parsons, in replying, admitted they were not able to trace the connection between the lymphatism and sudden death, but the fact remained that the condition was found present in the cases of sudden death which he had cited, and as cases accumulated there would be fair reason to believe that there was some connection.

Organisms from Cerebro-Spinal Meningitis.

The Secretary (Professor White) exhibited specimens of organisms obtained from cases of cerebro-spinal meningitis. From the first case reported he had, he said, made direct cultivations from spinal fluid obtained aseptically by lumbar puncture in broth, human blood serum, glycerine agar and litmus milk. The broth next day was barely clouded; tiny discrete grey colonies developed on the serum; the glycerine agar remained sterile. Subsequent examination showed these growths to be pure cultures of a diplococcus, sometimes seen in tetrad form, staining irregularly with simple stains like Löffler's blue and negative to Gram's stain. Microscopic examination of the cerebro-spinal fluid showed very many pus corpuscles and numerous organisms seen mainly as diplococci, but there were many tetrads and a few short chains. A considerable number of these organisms were inside the pus cells. Some of them appeared to have capsules, and like those in the cultures all were decolorised by Gram's method. He inoculated further cultures from the originals, and continued the inoculation to the fifth generation, which was still alive. The fourth and fifth had grown very well on ordinary agar, although the original inoculation on the glycerine agar was without result. He had done animal inoculations with negative results. The same organism in pure culture was obtained from later cases of the disease, but a smaller number of pus cells and fewer organisms were present, although the cases were more severe clinically. The diplococcus now exhibited had many of the characters of the organism described by Weichselbaum under the name, *Diplococcus intracellularis meningitidis*, but apparently differed from it in having a capsule, and in forming short chains. He was not quite satisfied that the organism was a distinct entity, but inclined rather to the opinion that it was a modified *Pneumococcus*. That, however, was difficult to prove. In a previous outbreak he got only the pneumococci from a great many cases, and during that outbreak in only one case did he get an organism which, like those now exhibited, might be classed with Weichselbaum's.

DR. DAY gave the clinical history of four cases, the curious thing about them all being, he said, that they were perfectly clear in their intellect.

PROFESSOR McWEENEY had observed two meningitis cases within the last few days from the Children's Hospital, Temple Street. A *post-mortem* was obtained in the first case, and revealed the tubercular form, limited to the cerebral pio-arachnoid. From this, numerous T. B. were obtained in smear preparations. A curious fact was that whilst engaged in searching through preparations of the membranes of the cord, he came across a single polynuclear leucocyte, containing a few typical "biscuit-shaped" diplococci. Was it a case of mixed infection? In the second case, which was regarded by Dr. D. Farnan as typical cerebro-spinal fever, there was no autopsy, but he had examined about 5 cc. of fluid obtained from the child (aged three) by lumbar puncture. The microscopic result was negative, but he had succeeded in growing from it, as the only organism present, a Gram-staining diplococcus tending to form tetrads and growing well in the form of small whitish colonies on ordinary agar, serum-agar and blood-agar. He felt sure this could not be the organism described by Weichselbaum and found by Professor White. The speaker concluded by referring to the probability that the organism obtained access *viâ* the posterior fossæ of the nose, to its propagation by contacts, to its low resisting power, and to the small numbers in which it occurred even in severe cases. He could only suppose that it must be highly toxic, though of this there was no experimental evidence.

Dr. Farnan read the clinical history of the cases mentioned by Dr. McWeeney from notes by the House Surgeons.

Dr. Parsons and **The Chairman** also spoke, and **Professor White** replied.

SECTION OF SURGERY.

President—H. R. Swanzy, President R.C.S.I.
Sectional Secretary—Edward H. Taylor, M.D., F.R.C.S.I.

Friday, February 22, 1907.

The President in the Chair.

Frontal Sinusitis.

Mr. Robert H. Woods exhibited three cases of frontal sinusitis subsequent to operation. He described the clinical history of each case, and gave an account of the operative procedure which he usually carried out for the affection. An incision was carried from within outwards along the line of the eyebrow, and the frontal sinus laid open by means of a small trephine, the aperture being subsequently enlarged by means of gouge forceps. The diseased mucous membrane lining the sinus and its recesses was thoroughly removed with a curette. The entire anterior wall of the sinus was not removed, as was generally recommended in the text-books, in order that the scalp might recede and adhere to the posterior sinus wall, because, in his opinion, this step was unnecessary. Obliteration of the cavity could be brought about after removal of the mucous membrane by the growth of granulation tissue from its bony walls which developed subsequent to the operation. Obliteration of the sinus took place first at the infundibulum, as the granulations fused first at this narrow outlet. Drainage, consequently, could not be carried out by this passage as efficiently as by means of a tube introduced by the wound.

Mr. P. Dempsey alluded to the difficulty in the complete eradication of sinus infection. There was nothing easier than to alleviate the discharge, and nothing more difficult than to get it to cease altogether.

Sir Thomas Myles referred to the methods of effecting complete obliteration of cavities in bone, and instanced the difficulty met with in securing the obliteration of a cavity in the head of the tibia—for instance, by granulation tissue.

Exhibits.

Sir Thomas Myles exhibited a man, aged sixty, in whom a large abdominal tumour could be detected. The patient had been admitted to hospital for injury to his hip, and had not been previously aware of the existence of the tumour. The swelling, which was suggestive of splenic enlargement, was quite painless and dull on percussion. Numerous hypotheses had been advanced as to the nature of the tumour, but none seemed satisfactory.

Sir Thomas Myles also exhibited a young man, aged twenty-one, who presented warty growths on both legs. The growths were somewhat painful, and seemed to him to be examples of a rare type of malignant disease, originally described by Hawkins as warty tumours of cicatrices.

Mr. Edward H. Taylor regarded the case as one of warty tuberculosis of the skin, and thought the best form of treatment would be excision, followed by Thiersch grafting.

Mr. Charles Maunsell and **Mr. Alexander Blayney** also regarded the growths as being of a tuberculous nature.

Mr. C. A. K. Ball exhibited a gangrenous gall-bladder. The patient from whom it was removed had been sent to hospital as a case of typical perforated gastric ulcer. On admission the patient presented symptoms of general peritonitis, originating probably in the appendix. An incision in the right iliac fossa revealed free blood-stained fluid; the appendix was slightly inflamed, and the cæcum was both inflamed and thickened. Another incision was made below the right costal arch, and a tumour resembling a kidney came into view. It proved to be a distended and gangrenous gall-bladder adherent to the colon. A small concretion was found blocking the cystic duct. The gall-bladder was removed, and the upper abdominal region was flushed out. The patient recovered, and her stomach symptoms were relieved. The contents of the gall-bladder were submitted to bacteriological examination, but were found sterile.

Mr. Alexander Blayney exhibited a specimen of Meckel's diverticulum which he had resected. The previous history of the patient pointed to severe attacks of pain, which rendered life miserable. Mr. Blayney thought that these attacks were due probably to slight intussusceptions, occurring from time to time, of the diverticulum into the intestine.

Mr. Charles Maunsell alluded to similar cases in his own practice.

Sir Thomas Myles exhibited various specimens of surgical interest, including (*a*) a renal tumour developing from a "supra-renal nest"; (*b*) malignant growth of the testis; (*c*) a pathological vermiform appendix; and (*d*) an extracapsular fracture of the neck of the femur.

SECTION OF MEDICINE.

President—J. M. Redmond, M.D., Pres. R.C.P.I.
Sectional Secretary—F. C. Purser, M.D., F.R.C.P.I.

Friday, March 1, 1907.

The President in the Chair.

A Case of Maniacal Chorea.

The President of the Academy (Dr. J. Magee Finny) read a paper on maniacal chorea. [It will be found at page 321 of Volume CXXIII., No. 425, Third Series, May, 1907.]

Dr. J. Craig said that rheumatism had scarcely yet got its proper place in the text-books. Some few years ago it was described under the head of diseases of the articulations; now it was described, rightly, as a specific fever. Associated with the toxæmia produced by the micro-organism there was always a certain amount of acute dilatation of the heart in the early stage, with a cardiac murmur that would subsequently disappear. The communication had tended to associate in their minds the great connection there was between chorea and rheumatism: the author had shown that chorea was merely a complication or manifestation of the rheumatic state. In treating cases of chorea he had retracted considerably from his belief in the administration of large doses of arsenic

Dr. Spencer Sheill recalled a communication of his dealing with two cases of chorea, both associated with pregnancy, one of which ceased when the uterus was emptied, and the other of which was perfectly described by Dr. Finny's case, with the exception that there was no rheumatic history. He regretted that in the latter case the autopsy was incomplete and unsatisfactory.

THE PRESIDENT OF THE ACADEMY, in replying, said if they were agreed that the poisons of rheumatism and chorea were identical, and affected different parts of the body through the toxin, it would help very much to explain some otherwise very difficult phenomena of clinical experience: it would make them very cautious of making little of cases of chorea which came into hospital. Choreiform movement was only a small expression of a serious poison which was intoxicating the patient and injuring the nervous and muscular system.

Movable Spleen, with Account of a Case.

DR. MOORHEAD read an account of a case of movable spleen. He also gave a *résumé* of the literature of the subject.

SECTION OF OBSTETRICS.

President—R. D. PUREFOY, M.D., F.R.C.S.I.
Sectional Secretary—HENRY JELLETT, M.D., F.R.C.P.I.

Friday, March 8, 1907.
THE PRESIDENT in the Chair.

Uterus showing a Fibro-myoma in Fundus and Cancer in Cervix.

DR. ALFRED SMITH exhibited a specimen of above from a lady forty years of age. He had diagnosticated and discovered polypus of the uterus, and had made up his mind to remove it as the cause of the hæmorrhage from which the lady suffered. During removal he found an ulcerated spot in the cervix which proved to be an adeno-carcinoma under the microscope.

SIR A. V. MACAN said the specimen was very interesting as showing two things which were extremely rare in combination, though neither was rare by itself.

Carcinoma of Body of Uterus; Sarcoma of Body of Uterus.

SIR A. V. MACAN exhibited specimens of the above. One case was that of a woman, aged sixty years, who had had ten children, the last being eighteen years old. She had had two miscarriages. For two years, up to October, 1905, she had not menstruated. She then had a heavy period lasting for three weeks, after which she saw nothing until October last, when she commenced a period which continued until operation on February 14. The other case was aged fifty years, and was operated upon on January 17.

DR. JELLETT, DR. DONNELLY and THE PRESIDENT spoke.

Delivery by Pubiotomy.

DR. HASTINGS TWEEDY, Master of the Rotunda Hospital, read a paper dealing with a case in which he had delivered a primiparous woman of a living child through an internal conjugate of 6.5 cms., at full term, by the performance of a left-sided pubiotomy. Hæmorrhage had been very severe, and had resulted in a considerable degree of collapse. Delivery had to be hastened because of prolapse of the cord, which took place before the operation was undertaken. Deep lacerations of the cervix, of the soft parts lying between the severed bone, and of the perinæum, required catgut sutures. The patient's recovery was uneventful, and she left the hospital in perfect health on the ninth week with a living child.

Pubiotomy, with Notes on Three Cases.

DR. M. J. GIBSON read a paper on the above subject. He said the idea of improving the prognosis for the mother and child in cases of contracted pelvis and of lessening the number of Cæsarean sections, inductions of premature labour and perforations of the living child by an artificial enlargement of the pelvis, is a very old one. Symphysiotomy, first demonstrated by Courvée in 1655, was first performed on the living by Sigault one hundred years later. Symphysiotomy was not and is not a very satisfactory operation. To Gigli belongs the honour of being the first to propose as a substitute for it an incision through the os pubis. The great danger in his operation lies in the large, easily infected incision which he employs. Döderlein's subcutaneous pubiotomy is really a new operation. It is so simple and the results are so good it may be regarded as one of the greatest discoveries in modern obstetrics. It is indicated in cases of narrow pelvis when the cervix is fully dilated, and in spite of good contractions the head moves freely about the brim. Good contractions are a power which must always be considered, because, by preparation of the maternal soft parts, and especially by good moulding of the fœtal head, many a head is driven through a narrow pelvis when we could hardly believe that such a thing could occur. The operation may be performed in cases of flat pelvis with a conjugata vera up to 6.75 cm., and in generally contracted pelvis up to 7 cm., but for these very low conjugates the head must not be larger nor harder than normal. He adopted Döderlein's method in his cases. A small incision, sufficient to admit a finger, is made over the bone, usually at the left side between the symphysis and tubercle. Döderlein's needle is passed down behind the bone and its point brought out in the greater labium. Gigli's saw is attached, and the bone divided. The hæmorrhage is, as a rule, easily stopped by compression. The patient should not be delivered except it is absolutely indicated. After labour is completed a few strips of adhesive plaster are put around the pelvis, a binder is applied, and the patient is kept lying on her back for twelve days. She may get up on the fourteenth or sixteenth day. The advantages over symphysiotomy are—the pelvis is prevented from springing suddenly apart by the undivided soft parts; the bladder and urethra are not so liable to injury during the operation; the operation is very much more easily and more rapidly performed. He performed his first operation on August 16, 1906, a 9-para, aged thirty-four years, who had no living child. She had premature labour induced twice. The pelvis generally contracted with a true conjugate of 8 cm. A child weighing twelve pounds was delivered without difficulty. The patient was walking about on the twenty-first day. Mother and child left hospital two days afterwards in perfect health. The second case was also a 9-para, aged thirty-two years. The second child was delivered with forceps, and is still alive. She had labour induced three times. The patient came into hospital after being in labour for fourteen hours. The cervix was fully dilated, the membranes ruptured, small head free above the brim. The pelvis generally contracted and flat with a true conjugate of 7.5 cm. The fœtal heart was 160, and very irregular, meconium coming away in large quantities. Mother had lobar pneumonia, and was in a very bad condition. Pubiotomy, a six pound child extracted with forceps. Mother had her crisis on the ninth day. Both left hospital on the twenty-fourth day in good condition. The third case, a 3-para, aged twenty-nine years. Second child delivered alive with forceps, weighed five and three-quarter pounds and is still alive. The pelvis, a rachitic flat; conjugata vera 7 cm. A child, which lay transversely, was easily delivered by podalic version after pubiotomy was performed. It weighed seven and a half pounds. The three babies were breast-fed. None of the women complained of pain or showed any difference from a normal confinement, except, of course, the second case, who was suffering from pneumonia. These three people dreaded a Cæsarean section, and absolutely refused such an operation; yet they had no fear of this. The maternal mortality so far is about 3 per cent. He concluded by saying that in his opinion there is a great future for this operation, and that it will never share the fate of symphysiotomy, but will remain for us in hospitals and in private houses a means of overcoming the difficulties connected with the lesser degrees of contraction of the pelvis without injury to the mother or child.

In discussing the two papers conjointly,

Sir A. V. Macan said the ease with which he had seen the operation done by an operator who had never done it before had convinced him that pubiotomy was certainly the operation in such cases as had been described by Dr. Gibson. There was nothing in it which could not be done by a man who had been through the Dublin school; and he considered it of the utmost importance that they should be able to put before the practitioner in the country the possibility of saving the life of both mother and child in cases where he had put on the forceps, but had failed, and was face to face with perforation.

Dr. Neil considered the operation of great importance since the risk of sepsis would be less than in the induction of premature labour.

Dr. Alfred Smith believed the operation had come to stay.

Dr. Jellett asked the communicators whether they would agree in dividing the operation into two classes—first, as the operation of election which they would select in preference to other procedures in any case in which they had reason to believe that the patient could not be delivered by forceps or her own efforts; secondly, as the operation of compulsion, where the forceps had been tried and failed. Looking at the operation from an unprejudiced standpoint, it seemed to him that in doing Cæsarean section on a perfectly healthy patient, unweakened by the long continuance of labour, they were more certain of the after results. On the other hand, he certainly agreed that, in the second class, pubiotomy had got its place and would keep it.

The ease with which it was performed, the small amount of assistance required, the small extent of the wound, and the short time in performance, would be important factors in producing a small mortality.

The President said he could not see how pubiotomy could take the place of Cæsarean section in certain cases. He thought that its danger had perhaps been passed over too lightly. The danger of injury to the bladder had been amply demonstrated by recorded cases. The danger of hæmorrhage must, he thought, be considerable, since a fatal case had been reported from Vienna. He could not help wondering whether the locomotive powers of the patients had been satisfactory afterwards in all cases, or whether sufficient time had elapsed to enable them to judge on the point. He agreed, however, as to the value of the procedure.

Dr. Tweedy, in reply, said that while both symphysiotomy and hebotomy had come to stay he did not think that either would prove a perfect panacea. He had performed both operations with equal ease.

Dr. Gibson, in reply, said that as regards the chance of injuring the bladder they must remember that in pubiotomy they had a great protection of the pelvis by the undivided soft parts. The bladder was never so intimately connected with the pubic bone that any tearing could result from the small amount of stretching undergone, except when owing to a previous puerperal sepsis there were adhesions between the bladder and the bone. This occurred very rarely. A French author had stated that the ends of the bone could separate up to 8 cm. without injury to the bladder or articulations. If bleeding could not be stopped by compression they could open the wound and find where the bleeding was coming from. Pubiotomy was, he believed, a safer operation than Cæsarean section up to a certain point—*i.e.*, a pelvis with a conj. vera above 6.75 c.m. The latter was better done at the beginning of labour, therefore we had no chance of seeing what the contractions would do for us, and no matter how well it was done there were cases on record where the cicatrix gave way afterwards. Both operations would unite equally well if performed aseptically, but the danger to the bladder and urethra was much greater in symphysiotomy than in pubiotomy, and the former was also a more difficult operation, and therefore not so well suited for the country practitioner.

SECTION OF PATHOLOGY.

President—J. F. O'Carroll, M.D., F.R.C.P.I.
Sectional Secretary—Professor A. H. White, F.R.C.S.I.

Friday, March 15, 1907.

Dr. W. R. Dawson in the Chair.

Abscess of Cerebellum.

Dr. W. Boxwell exhibited an abscess, in right lobe of cerebellum, taken from a boy, fourteen years of age, who, his mother said, had always been an idiot. About Christmas he was struck with a snowball behind the ear, where a lump subsequently arose. For a few days he had a discharge. He was brought into hospital on January 8th suffering from attacks of vomiting, and in a curious drowsy state. The large lump behind the ear was diagnosticated as hæmatoma. He was then in a hectic condition; he vomited everything given to him, and also at intervals irrespective of food. An operation was performed on January 12th, with a view to find the condition of the lump and to ascertain if there were any disease in the antrum and sinuses. The lump was found to be a suppurating hæmatoma; and, with a view to clearing out possible mischief in the mastoid cells, they were trephined, but no particular sign of disease was found. On further exploration a suppurating track was found leading down through the occipital bone, from which pus was slowly oozing. This was found to lead under the base of the skull, and a large suppurating sinus was found. The track was drained, but no relief of the symptoms followed. The boy became more and more drowsy, and was again operated on the 25th, the skull being trephined and the brain explored for abscess. None could be found. Five days afterwards the boy died. At the *post-mortem* there was found on the right side a large cerebellar abscess, which had opened of itself on the under surface, and a pool of pus was lying in the occipital fossa. On exploring the original suppurating sinus with an ordinary bent probe, it passed easily into the cavity, and the cavity had been slowly emptying itself through the sinus and the drain. Examination of the pus showed the presence of ordinary pus cocci.

The Chairman asked if Dr. Boxwell considered there was any causal connection between the suppurating hæmatoma and the abscess, or whether the hæmatoma was altogether a different lesion which became infected by the sinus burrowing into it. It struck him that, for an idiot's brain, it was extremely well-formed and convoluted, and he would like to know if anything had been ascertained as to the boy's degree of mental weakness.

DR. BOXWELL, in reply, said the idea was that it was a direct infection from the bone. There was no sign of any mischief through the ear-duct, and there was no disease whatever in the antrum. Whether the hæmatoma became infected secondarily from the pus escaping through the hole in the bone, or *vice versâ*, he did not know. The pus in the cavity was recent. The boy could give no history of himself. His mother said he had always been an idiot, and could not be trusted with a message.

(*a*) *Sarcoma of Femur ;* (*b*) *Tubercular Knee-Joint.*

MR. L. G. GUNN exhibited specimens of the above. He did so, he said, because both were diagnosticated to be the same condition. Both presented symptoms of chronic inflammation of the knee-joint, which was believed to be tuberculous. In one case the diagnosis was correct; in the other it was very much mistaken.

Sacro-Coccygeal Teratoid Tumour, with Formation of Metastases in the Groin.

MR. SETON PRINGLE read a paper on "A Sacro-Coccygeal Teratoid Tumour, with Formation of Metastases in the Groin." The growth had been removed from a man, aged fifty-seven years, who had first noticed it thirty-five years previously as a small lump in the middle line, behind the anus. Since that time the tumour had grown slowly, till at operation it measured fifteen inches over all, from lower to upper extremity, and eleven inches from side to side, extending from the upper border of the sacrum to the anal margin, and from outside the left margin of the sacrum to well on to the right gluteal region. Two metastatic growths, each the size of a large hen-egg, were present in the right inguinal region, one of these had appeared thirty-three years and the other twenty years prior to the time of examination. By the rectum the hollow of the sacrum was found to be full of growth, but, as the patient was most anxious for operation, the posterior extern pelvic tumour and the secondary glands were successfully removed. At the operation a pedicle of growth was found, extending through the coccyx, which had been almost completely destroyed, connecting the intern and extern pelvic portions of the tumour. The patient, unfortunately, died a year later in the country from intestinal obstruction. Mr. Pringle then described the macro- and micro-scopical characters of the tumour and glands, and gave a short *résumé* of the literature of the subject, placing the growth in the class of monogerminal teratoid tumours as described by Borst. In conclusion, he pointed out the case differed from recorded cases in three particulars—(1) The late appearance of the tumour, most recorded tumours having been present at birth. (2) The comparatively simple structure of the growth. (3) The occurrence of metastases.

THE SECRETARY (Professor A. H. White) recalled a case of a tumour in the same region which supported the view that such tumours were parasitic. It was from a girl of sixteen or seventeen. A tumour which had been small suddenly took on rapid growth, and contained portions that were typically cancerous, and others that were typically like round-celled sarcoma, besides almost every fully formed tissue that could possibly be found. In the case shown by Dr. Pringle the structure of the tumour was much less complex.

MR. GUNN cited a couple of cases of similar tumours.

DR. PRINGLE replied.

Cerebro-Spinal Meningitis.

DR. HARVEY exhibited slides from a case of cerebro-spinal meningitis—a girl, aged ten. She had been perfectly well on the morning of the previous Monday. While swallowing a piece of liver she choked, and, not getting much relief, she was brought to hospital. There she developed great tenderness down the spine. She passed into a comatose condition; her eyes were open, but there was no cornea reflex. She died the same night. Next morning he drew off some fluid by lumbar puncture. The slides which he had prepared show a diplococcus in great numbers, even in the original fluid, and outside the cell. They were distinctly non-Gram staining. One of the slides showed a capsule round the cocci—which was said not to exist.

PROFESSOR WHITE observed that the cocci shown were all stained much in the same way. In those which he himself had got the irregularity of the staining was most pronounced, some taking it deeply, others only slightly. The regularity in Dr. Harvey's specimens was probably due to the early stage at which the patient had died. With regard to the cocci which exhibited capsules, he had found the same in some of the organisms which he had got from certain cases this year. Weichselbaum and his school denied absolutely the existence of a round capsule in his coccus; but Jäger, who had considerable experience, stated that capsules were frequently seen. Between the supporters of the two there was considerable strife, both on that point and also as to whether the organisms were always negative to Gram. The former school say that those which were positive to Gram were not the specific organism at all. He mentioned the fact that sub-cultures of an apparently pure non-Gram staining organism became Gram-staining as showing that the question of staining was not yet settled.

Dr. Day asked if there was any history of discharge from the nose in the case. He had found it in all cases except one, and Continental observers had reported a diplococcus found in swabs taken from fifty per cent. of cases.

Mr. Gunn said he had seen the child in hospital, and no history of discharge could be obtained. He was inclined to think she had been ill for a longer period than the parents made out, and that the choking was probably some defect of swallowing. About an hour and a half before death there were five or six fairly typical spots on the child's limbs. After death he saw the body almost covered with them.

Dr. Harvey, in reply, said the preparation to which Professor White had referred as showing regularity in staining had been made from the original fluid; but on making some more that day he had noticed great irregularity in the staining; and the appearance of diplococci apparently much larger than the other cocci gave him the idea that the cocci had swollen out.

FORMALIN FOR SWEATING.

Excessive sweating of the palms, feet, and axillæ is not infrequently met with in anæmic individuals, and is a most troublesome symptom. Bathing the affected parts with a sponge wrung out of very hot water, and applying immediately afterwards a five per cent. lotion of formalin may be tried. After the latter a dusting powder of chalk, alum, and starch, in the proportion of one, two, and three, may be shaken on. Constitutional treatment with iron and strychnin is nearly always indicated in addition. One gratifying result of the formalin treatment is that the drug is such a good deodoriser.—*The Hospital,* June 22, 1907.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by the EDITOR.

VITAL STATISTICS

For four weeks ending Saturday, May 18, 1907.

IRELAND.

THE average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending May 18, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 22.0 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, May 18, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality :—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c.	Week ending				Average Rate for 4 weeks
	April 27.	May 4	May 11	May 18			April 27	May 4	May 11	May 18	
22 Town Districts	27.9	23.8	22.4	22.0	24.0	Lisburn -	9.1	13.6	18.2	13.6	13.6
Armagh -	20.6	20.6	27.5	—	17.2	Londonderry	34.4	16.0	16.0	13.5	20.0
Ballymena	38.3	14.4	23.9	19.2	24.0	Lurgan -	53.1	4.4	17.7	17.7	23.2
Belfast -	23.9	23.8	24.5	22.3	23.6	Newry -	33.6	21.0	25.2	12.6	23.1
Clonmel -	20.5	15.4	25.6	15.4	19.2	Newtownards	57.2	45.8	34.3	22.9	40.0
Cork -	21.9	21.2	19.9	21.9	21.2	Portadown -	10.3	10.3	—	10.3	7.7
Drogheda -	24.5	32.7	12.3	20.4	22.5	Queenstown	—	19.8	19.8	—	9.9
Dublin - (Reg. Area)	33.5	26.4	24.0	26.7	27.6	Sligo -	33.6	24.0	14.4	9.6	20.4
Dundalk -	4.0	12.0	8.0	12.0	9.0	Tralee -	10.6	21.1	31.7	21.1	21.1
Galway -	23.3	11.7	3.9	27.2	16.5	Waterford -	40.9	27.3	25.3	19.5	28.2
Kilkenny -	54.1	34.3	14.7	9.8	28.2	Wexford -	9.3	18.7	18.7	18.7	16.4
Limerick -	17.8	27.3	17.8	13.7	19.2						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, May 18, 1907, were equal to an annual rate of 0.7 per 1,000, the rates varying from 0.0 in seventeen of the districts to 3.9 in Galway—the 7 deaths from all causes registered in that district including one from typhus. Among the 158 deaths from all causes registered in Belfast are 2 from measles, one from whooping-cough, 2 from diarrhœal diseases, 14 deaths from cerebro-spinal fever, and 7 returned as from *cerebro-spinal meningitis.* The 32 deaths from all causes in Cork include one from whooping-cough.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, May 18, 1907, amounted to 167—88 boys and 79 girls; and the deaths to 208—111 males and 97 females.

DEATHS.

The registered deaths represent an annual rate of mortality of 27.8 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the Area, the rate was 26.7 per 1,000. During the twenty weeks ending with Saturday, May 18, the death-rate averaged 28.5, and was equal to the mean rate for the corresponding portions of the ten years, 1897-1906.

Included in the deaths (208) there were 2 from measles, 4 from whooping-cough, one from *diarrhœa*, one from diphtheria, 2 from cerebro-spinal fever, and 4 from influenza. In the preceding 3 weeks deaths from measles had been 10, 3, and 6; deaths from whooping-cough had been 15, 10, and 8; deaths from diphtheria had been one, 0, and one; deaths from diarrhœal diseases had been one, one, and one; deaths from influenza had been 5, 2, and 3; and deaths from cerebro-spinal fever had been 2, 0, and 0.

Under the general heading pneumonia there were 23 deaths—namely, 5 from lobar pneumonia, 7 from broncho-pneumonia, and 11 from *pneumonia* (not defined).

Tuberculous diseases accounted for 49 deaths, or nearly 24 per cent. of all the deaths registered during the week. These deaths included 12 from tubercular phthisis, 17 returned as from *phthisis*, 5 from tubercular meningitis, 2 tubercular peritonitis, one from *tabes mesenterica*, and 12 deaths from other forms of the disease. In the 3 preceding weeks deaths from all forms of tuberculous diseases had been 54, 53, and 27, respectively.

There were 6 deaths from carcinoma, and 5 deaths from cancer (undefined).

The deaths of 2 infants were caused by prematurity.

Of 18 deaths from diseases of the brain and nervous system, 8 were from meningitis, and 4 were of children under 5 years of age from *convulsions*.

Diseases of the heart and blood vessels caused 27 deaths, and there were 16 deaths from bronchitis.

Two deaths were due to accidental circumstances.

In 9 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 4 children under one year of age and the death of one person aged 66 years.

Fifty-five of the persons whose deaths were registered during the week were under 5 years of age (30 being infants under one year, of whom 8 were under one month old) and 59 were aged 60 years and upwards, including 32 persons aged 70 and upwards, of whom 6 were octogenarians, and one (a female) was stated to have been aged 94 years.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. Byrne Power, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended May 18, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	Apr. 27	-	*	*	4	5	-	5	-	2	2	18	1	*	*	8	40
	May 4	-	*	*	4	1	-	6	-	2	1	10	-	*	*	-	24
	May 11	-	*	*	1	1	-	3	-	3	3	6	-	*	*	-	17
	May 18	-	*	*	2	-	-	3	-	5	1	5	-	*	*	2	18
Rathmines and Rathgar Urban District	Apr. 27	-	*	*	2	-	-	1	-	-	-	1	-	*	*	-	4
	May 4	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	May 11	-	*	*	1	-	-	2	-	1	-	-	-	*	*	-	4
	May 18	-	*	*	-	-	-	-	-	-	-	1	-	*	*	4	5
Pembroke Urban District	Apr. 27	-	15	2	1	-	-	-	-	2	-	-	-	*	77	-	97
	May 4	-	2	-	-	-	-	-	-	-	-	2	-	*	21	-	25
	May 11	-	16	-	-	-	-	-	-	-	-	1	-	*	10	-	27
	May 18	-	32	-	1	-	-	-	-	-	-	1	-	*	33	-	67
Blackrock Urban District	Apr. 27	-	*	*	3	-	-	-	-	-	-	-	-	*	*	-	3
	May 4	-	*	*	-	-	-	2	-	-	-	-	-	*	*	-	2
	May 11	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	May 18	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
Kingstown Urban District	Apr. 27	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	May 4	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	May 11	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	May 18	-	*	*	-	-	-	-	-	-	1	1	-	*	*	-	2
City of Belfast	Apr. 27	-	*	*	12	-	-	5	2	4	7	4	-	*	*	20	54
	May 4	-	*	*	17	-	-	4	-	6	6	7	-	*	*	30	70
	May 11	-	*	*	18	-	-	2	1	9	4	2	1	*	*	29	61
	May 13	-	*	*	8	-	-	4	-	2	5	6	-	*	*	24	49

The Registrar of Belfast, No. 14 District, reports as follows:—"A case of cerebro-spinal meningitis occurred in Holywood (Castlereagh No. 2) on the 15th instant, a boy, aged 16 years, who was removed to hospital in Belfast, and died on the 16th instant."

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended Saturday, May 18, 1907, 29 cases of measles were admitted into hospital, 16 were discharged, there were 2 deaths, and 132 cases remained under treatment at its close. At the close of each of the three preceding weeks the cases of measles under treatment numbered 83, 115, and 121.

Four cases of scarlet fever were admitted to hospital, 12 were discharged, and 40 cases remained under treatment at the close of the week. This number is exclusive of 14 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

Seven cases of typhus remained under treatment in hospital at the close of the week.

Four cases of diphtheria were admitted to hospital, 12 were discharged, there was one death, and 24 patients remained under treatment at the close of the week.

Three cases of enteric fever were admitted to hospital, 4 were discharged, and 9 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 14 cases of pneumonia were admitted to hospital, 14 were discharged, there were 2 deaths, and 42 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, May 18, 1907, in 76 large English towns, including London (in which the rate was 15.2), was equal to an average annual death-rate of 15.1 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 19.7 per 1,000, the rate for Glasgow being 21.8 and that for Edinburgh 16.3.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General for Ireland has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ending May 18. From this Report it appears that of a total of 42 cases notified, 20 were of scarlet fever, 12 of diphtheria, and 6 of erysipelas. Among the 335 cases of infectious diseases in hospital at the close of the week were 108 cases of scarlet fever, 54 of measles, 49 of whooping-cough, 35 of diphtheria, 2 of membranous croup, 10 of enteric fever, and 9 of erysipelas.

VITAL STATISTICS

For four weeks ending Saturday, June 15, 1907.

IRELAND.

THE average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending June 15, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 21.2 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, June 15, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality :—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c	Week ending				Average Rate for 4 weeks
	May 25	June 1	June 8	June 15			May 25	June 1	June 8	June 15	
22 Town Districts	21.8	20.9	21.7	21.2	21.4	Lisburn -	22.7	—	9.1	4.5	9.1
Armagh -	6.9	13.7	—	20.6	10.3	Loudonderry	11.0	14.7	23.3	13.5	15.6
Ballymena	4.8	33.5	14.4	19.2	18.0	Lurgan -	26.6	31.0	8.9	17.7	21.1
Belfast -	23.1	22.0	22.7	19.7	21.9	Newry -	33.6	12.6	4.2	8.4	14.7
Clonmel -	20.5	10.3	10.3	61.5	25.6	Newtownards	5.7	11.4	45.8	22.9	21.4
Cork -	16.4	21.9	17.1	18.5	18.5	Portadown	25.8	10.3	15.5	31.0	20.7
Drogheda -	12.3	20.4	20.4	8.2	15.3	Queenstown	13.2	19.8	—	33.0	16.5
Dublin - (Reg. Area)	25.8	23.1	23.9	24.3	24.3	Sligo -	9.6	14.4	4.8	62.4	22.8
Dundalk -	35.9	8.0	8.0	27.9	20.0	Tralee -	5.3	5.3	10.6	15.9	9.3
Galway -	38.8	15.5	23.3	3.9	20.4	Waterford	7.8	21.4	39.0	21.4	22.4
Kilkenny -	19.7	9.8	34.3	14.7	19.6	Wexford -	9.3	18.7	23.3	23.3	18.7
Limerick -	12.3	19.1	16.4	10.9	14.7						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, June 15, 1907, were equal to an annual rate of 1.1 per 1,000—the rates varying from 0.0 in eighteen of the districts to 5.7 in Newtownards. Among the 140 deaths from all causes in Belfast are 6 from measles, 2 from scarlet fever, one from diarrhœa, 12 from cerebro-spinal fever, and 3 returned as from *cerebro-spinal meningitis.*

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, June 15, 1907, amounted to 196—107 boys and 89 girls; and the deaths to 191—98 males and 93 females.

DEATHS.

The registered deaths represent an annual rate of mortality of 25.5 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the Area, the rate was 24.3 per 1,000. During the twenty-four weeks ending with Saturday, June 15, the death-rate averaged 27.9, and was 0.5 above the mean rate for the corresponding portions of the ten years, 1897-1906.

Included in the deaths (191) there were 3 from measles, 8 from whooping-cough, one from *diarrhœa,* 5 from cerebro-spinal fever, and 3 from influenza. In each of the 3 preceding weeks, deaths from measles were 6, 4, and 6; deaths from whooping-cough were 10, 8, and 4; deaths from diarrhœal diseases were 0, 0, and 0; deaths from influenza were 1, 2, and 6; and deaths from cerebro-spinal fever were 2, 3, and 0.

The deaths from pneumonia comprise 9 from broncho-pneumonia, and 6 from *pneumonia* (not defined).

The total number of deaths from all forms of tuberculous disease amounted to 38, as against the totals 44, 25, and 32 in each of the preceding 3 weeks. The total (38) included 12 deaths from tubercular phthisis, 15 deaths returned as from *phthisis*, 5 deaths from tubercular meningitis, one death from tubercular peritonitis, and 5 deaths from other forms of the disease.

The deaths of 4 infants, prematurely born, were registered.

The deaths (16) from diseases of the brain and nervous system include 3 deaths from meningitis; 5 deaths of children under 5 years of age were from *convulsions*.

Diseases of the heart and blood vessels accounted for 29 deaths, and 19 persons succumbed to bronchitis

The death of an infant under one year of age was caused by drowning.

Three deaths were returned as due to carcinoma, and 7 deaths as due to *cancer* (undefined).

In 11 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases comprise the deaths of 4 infants under one year of age, and of 3 children aged between one year and 5 years, and the deaths of two persons aged 60 years or upwards.

Fifty two of the persons whose deaths were registered during the week were under 5 years of age (28 being infants under one year, of whom 9 were under one month old) and 45 were aged 60 years and upwards, including 24 persons aged 70 and upwards, of whom 5 were octogenarians, and one (a male) was stated to have been aged 92 years.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. Byrne Power, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended June 15, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	May 25	-	*	*	6	1	-	8	-	-	4	7	1	*	*	1	28
	June 1	-	*	*	3	-	-	4	-	1	5	19	-	*	*	2	34
	June 8	-	*	*	4	-	-	7	-	1	5	17	-	*	*	1	35
	June 15	-	*	*	5	1	-	4	-	1	4	10	-	*	*	2	27
Rathmines and Rathgar Urban District	May 25	-	*	*	4	-	-	1	-	-	-	2	-	*	*	-	7
	June 1	-	*	*	-	-	-	-	-	-	2	1	-	*	*	-	3
	June 8	-	*	*	-	-	-	-	-	-	-	-	-	*	*	1	1
	June 15	-	*	*	-	-	-	-	-	-	1	-	-	*	*	2	3
Pembroke Urban District	May 25	-	16	-	-	-	-	2	-	-	-	1	-	*	6	-	25
	June 1	-	31	-	-	-	-	-	-	-	-	1	-	*	21	-	53
	June 8	-	44	-	2	-	-	3	-	-	-	-	-	*	13	-	62
	June 15	-	54	-	-	-	-	-	-	-	-	-	-	*	4	-	58
Blackrock Urban District	May 25	-	*	*	1	-	-	-	-	-	-	1	-	*	*	-	2
	June	-	*	*	3	-	-	-	-	-	-	-	-	*	*	-	3
	June 8	-	*	*	1	-	-	-	-	-	-	-	-	*	*	-	1
	June 15	-	*	*	1	-	-	-	-	-	-	-	-	*	*	-	1
Kingstown Urban District	May 25	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	June 1	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	June 8	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	June 15	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
City of Belfast	May 25	-	*	*	5	-	-	3	1	1	5	4	-	*	*	22	41
	June 1	-	*	*	11	-	-	5	1	2	3	12	-	*	*	22	56
	June 8	-	*	*	12	-	-	2	1	6	11	10	-	*	*	13	55
	June 15	-	*	*	9	-	-	-	-	6	5	2	1	*	*	17	40

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended Saturday, June 15, 1907, 22 cases of measles were admitted into hospital, 30 patients were discharged, there were 2 deaths, and 91 cases remained under treatment at its close.

Seven cases of scarlet fever were admitted to hospital, 6 were discharged, and 48 cases remained under treatment at the close of the week. This number is exclusive of 2 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was admitted to hospital during the week, and 2 cases remained under treatment at its close.

Three cases of diphtheria were admitted to hospital, 8 were discharged, and 18 patients remained under treatment at the close of the week.

Eleven cases of enteric fever were admitted to hospital, 6 were discharged, there was one death, and 23 cases remained under treatment in hospital at the close of the week.

In addition to the above named diseases, 11 cases of pneumonia were admitted to hospital, 14 were discharged, there were 3 deaths, and 33 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, June 15, 1907, in 76 large English towns, including London (in which the rate was 12.8), was equal to an average annual death-rate of 13.1 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 17.2 per 1,000, the rate for Glasgow being 18.5 and that for Edinburgh 16.5.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General for Ireland has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ending June 15. From this Report it appears that of a total of 65 cases notified 24 were of scarlet fever, 10 of diphtheria, 11 of erysipelas, and one of enteric fever. Among the 375 cases of infectious diseases in hospital at the close of the week were 126 cases of scarlet fever, 69 of measles, 29 of diphtheria, 66 of whooping-cough, 2 of membranous croup, 9 of erysipelas, and 7 of enteric fever.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of May,* 1907.

Mean Height of Barometer, - - -	29.813 inches.
Maximal Height of Barometer (17th, at 9 p.m.),	30.334 „
Minimal Height of Barometer (2nd, at 12 35 p.m.),	29.130 „
Mean Dry-bulb Temperature, - - -	50.8°.
Mean Wet-bulb Temperature, - - -	47.2°.
Mean Dew-point Temperature, - - -	43.5°.

Mean Elastic Force (Tension) of Aqueous Vapour,	.287 inch.
Mean Humidity - - - -	77.3 per cent.
Highest Temperature in Shade (on 27th), - -	67.5°.
Lowest Temperature in Shade (on 1st), -	34.4°.
Lowest Temperature on Grass (Radiation) (1st),	31.0°.
Mean Amount of Cloud, - - -	61.3 per cent.
Rainfall (on 17 days), - - - -	3.211 inches.
Greatest Daily Rainfall (on 6th), - -	1.115 „
General Directions of Wind, - - -	N.E., E.

Remarks.

The month opened with low barometer readings and strong and squally westerly winds, rising to a gale on the 2nd and 4th. Then came a week of southerly winds and heavy rains—the measurement for the week ended Saturday, the 11th, being 2.215 inches, of which 1.115 inches fell on the night of the 6th in connection with a thunderstorm. Cold winds from polar quarters brought low temperatures after Tuesday, the 14th, but the rainfall was slight and infrequent till the 29th, when a shallow atmospheric depression spread in from the Atlantic and threw the weather into a gloomy, damp and rainy state, which lasted to the close of the month.

In Dublin the arithmetical mean temperature (51.4) was 0.7° below the average (52.1°). The mean dry-bulb readings at 9 a.m. and 9 p.m. were 50.8°. In the forty-three years ending with 1907, May was coldest in 1869 (M. T. = 48.2°), and warmest in 1893 (M. T. = 56.7°). In 1906 the M. T. was 51.7°.

The mean height of the barometer was 29.813 inches, or 0.176 inch below the corrected average value for May—namely, 29.989 inches. The mercury rose to 30.334 inches at 9 p.m. of the 17th, having fallen to 29.130 inches at 12 35 p.m. of the 2nd. The observed range of atmospheric pressure was, therefore, 1.204 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 50.8°, or 4.6° above the value for April, 1907—46.2°. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.*) × .47, the value is 51.0°, or 0.7° below the average mean temperature for May, calculated in the same way, in the thirty years, 1871–1900, inclusive (51.7°). The arithmetical mean of the maximal and minimal readings was 51.4°, compared with a thirty years' average of 52.1°. On the 27th the thermometer in the screen rose to 67.5°—wind, E.; on the 1st the temperature fell to 34.4°—wind, W.N.W. The minimum on the grass was 31.0°, also on the 1st.

The rainfall amounted to 3.211 inches, distributed over 17 days. The average rainfall for May in the thirty-five years, 1866–1900, inclusive, was 2.020 inches, and the average number of rainy days was 15. The rainfall and the rainy days were, therefore, both above the average. In 1886 the rainfall in May was very large—5.472 inches on 21 days; in 1869, also, 5.414 inches fell on 19 days. On the other hand, in 1895, only .177 inch was measured on but 3 days. In 1896 the fall was only .190 on 7 days. In 1906, 2.472 inches fell on 20 days.

A solar halo appeared on the 1st, 5th, 21st and 29th. High winds were noted on 9 days, and attained the force of a gale on the 2nd and 4th. Hail fell on the 2nd and 21st. There was a fog on the evening of the 26th. Lightning was seen on the 5th, and a thunderstorm occurred on the evening of the 6th.

During the month the thermometer did not fall below 32° in the screen, but on the 1st it fell to 31.0° on the grass. The mean minimal temperature on the grass was 41.6°, compared with 41.9° in 1906, 42.5° in 1905, 42.6° in 1904, 44.3° in 1903, 40.3° in 1902, 41.7° in 1901, and 37.6° in 1894. The maximum reached or exceeded 60° on 9 days, but never fell short of 50°. The absolute maximum was 67.5° on the 27th.

The rainfall in Dublin during the five months ended May 31st amounted to 9.499 inches on 81 days, compared with 11.592 inches on 97 days in 1906, 9.026 inches on 81 days in 1905, 11.741 inches on 92 days in 1904, 12.560 inches on 95 days in 1903, 9.973 inches on 81 days in 1902, 7.724 inches on 67 days in 1901, 5.971 inches on 70 days in 1896, and a thirty-five years' average of 10.140 inches on 80 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. William J. Good, returns the mean height of the barometer as 29.816 inches, the highest reading observed being 30.334 inches at 9 p.m. of the 17th, the lowest, 29.171 inches at 9 p.m. of the 2nd. The arithmetical mean temperature was 49.7°, the mean dry-bulb reading at 9 a.m. and 9 p.m. being 50.6°. Rain fell on 18 days to the amount of 3.013 inches, 1.085 inches being measured on the 6th. The number of hours of bright sunshine registered by the Campbell-Stokes sunshine recorder was 173.0, giving a daily average of 5.6 hours. The corresponding figures for May, 1904, were 192.5 hours and 6.2 hours, for 1905, 215.7 hours and 7.0 hours, and for 1906, 132.5 hours and 4.3 hours, respectively. The mean earth-temperature at 9 a.m. was 51.8° at a depth of one foot below the surface, 49.8° at 4 feet. The corresponding values for 1906 were 50.7° and 48.6°. The highest temperature recorded by the black bulb *in vacuo* (solar radiation) was 124.4° on the 13th, the lowest temperature on the grass (terrestrial radiation) was 23.1° on the 21st. The highest temperature in the shade was 65.4° on the 27th; the lowest was 30.3° on the 18th.

At Knockdolian, Greystones, Co. Wicklow, the rainfall measured by Mr. R. Cathcart Dobbs, J.P., was 4.920 inches, distributed over 15 days—1.680 inches falling on the 6th, and .560 inch on the 10th. The total fall since January 1st, 1907, equals 10.62 inches on 69 days, compared with 11.665 inches on 66 days in 1906, 9.611 inches on 67 days in 1905, 12.027 inches on 84 days in 1904, 15.655 inches on 79 days in 1903, 11.750 inches on 68 days in 1902, 11.205 inches on 65 days in 1901, and only 5.716 inches on 52 days in 1896.

Dr. Arthur G. Price measured 4.92 inches of rain on 16 days at Clonsilla, Greystones, Co. Wicklow. The heaviest fall in 24 hours was 1.49 inches on the 6th. In addition, .55 inch fell on the 10th and .51 inch on the 5th.

According to Mr. Robert O'B. Furlong, C.B., the rainfall at Cloneevin, Killiney, was 3.54 inches on 15 days, compared with 2.55 inches on 20 days in 1906, 1.83 inches on 9 days in 1905, 2.48 inches on 15 days in 1904, 2.54 inches on 15 days in 1903, 2.58 inches on 21 days in 1902, and 1.20 inches on 10 days in 1901. The maximal fall in 24 hours was 1.17 inches on the 6th. The average rainfall in May at this station during the 22 years, 1885–1906, inclusive, was 2.115 inches on 13.8 days. Since January 1st, 1907, 9.22 inches of rain have fallen at Cloneevin on 73 days.

Dr. Arthur S. Goff returns the rainfall at Lynton, Dundrum, Co. Dublin, as 3.66 inches on 16 days, compared with 2.74 inches on 21 days in 1906, 1.42 inches on 11 days in 1905, 2.46 inches on 18 days in 1904, 2.86 inches on 18 days in 1903, 3.26 inches on 22 days in 1902, and 1.09 inches on 10 days in 1901. The greatest daily measurement was 1.06 inches on the 6th, when there was a thunderstorm. The temperature in the shade ranged from 36° on the 1st to 66° on the 24th. The mean temperature of the month was 51.1°, compared with 51.8° in 1906, 54.5° in 1905, 53.3° in 1904, 53.1° in 1903, 50.5° in 1902, and 52.6° in 1901. There were hail showers on the 1st and 2nd.

Dr. T. H. Peyton reports that the rainfall at the Royal National Hospital for Consumption, Newcastle, Co. Wicklow, was 4.836 inches on 18 days, the greatest fall in 24 hours being 1.202 inches on the 6th. From January 1, 1907, to May 31st, inclusive, 11.018 inches of rain were measured at this station on 74 days. The screened thermometers ranged from 34.4° on the 22nd to 62.5° on the 25th.

At White Cross, Stillorgan, Miss Muriel E. O'Sullivan measured 3.565 inches of rain on 17 days, the maximum in 24 hours being 1.100 inches on the 6th.

Dr. C. Joynt, F.R.C.P.I., returns the rainfall at 21 Leeson Park, Dublin, at 3.255 inches on 16 days, 1.110 inches being measured on the 6th.

Mr. T. Bateman returns the rainfall at the Green, Malahide, Co. Dublin, at 3.200 inches on 18 days, compared with 3.174 inches on 19 days in 1906. The greatest rainfall in 24 hours was 1.09 inches on the 6th. The extremes of temperature in the shade were—highest, 67°, on the 27th; lowest, 33°, on the 21st. The mean temperature was 48.7°, compared with 49.7° in 1906.

Mr. W. Miller registered 3.58 inches of rain at Cork on 19 days. The greatest fall in 24 hours was .50 inch on the 1st and 12th. The rainfall was 1.38 inches in excess of the average for May. The rainfall of the first five months of 1907 was 10.63 inches, or 4.61 inches less than the average.

The Rev. Arthur Wilson, M.A., writing from Dunmanway Rectory, Co. Cork, states that 6.27 inches of rain fell there on 22 days, .94 inch being measured on the 30th, .75 inch on the 1st and 29th, and .70 inch on the 9th.

At the Ordnance Survey Office, Phœnix Park, Dublin, rain fell on 18 days to the total amount of 2.774 inches, the largest measurement being 1.040 inches on the 6th. The duration of bright sunshine was 165.7 hours, of which 13.6 hours occurred on the 19th.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

"Wellcome" Brand Anæsthetics.

It is well known that chloroform is subject to decomposition by the action of air and ordinary daylight. To avoid all possibility of deterioration from such influences "Wellcome" brand chloroform is issued in hermetically-sealed, amber-coloured glass tubes. "Wellcome" brand ether, sp. gr. .720, which conforms to the requirements of the British Pharmacopœia for pure ether, is also issued in hermetically-sealed glass tubes. By this method perfectly fresh and chemically pure anæsthetics are always available. In both cases these tubes contain accurately measured quantities, and are convenient for charging graduated drop-bottles or those employed with inhalers. "Wellcome" brand chloroform and "Wellcome" brand ether are issued in tubes of 30 cc. and 60 cc. They are conveniently portable, since each tube is packed separately in a wooden container in such a manner that there is practically no risk of breakage by accident.

Elixir Heroin and Terpin Hydrate.

This elegant preparation, which presents the marked sedative properties of heroin and the stimulating action of terpin hydrate in the proportions stated on the label, is widely prescribed in acute and chronic bronchitis, in pneumonia, pleuritis, asthma, laryngitis, &c. It is a pleasant and effective expectorant, and exerts its soothing and toning influences without the drawbacks of opium or morphin. The dose is from 1 to 4 fl. drachms, swallowed slowly. It is supplied in bottles of 4, 8, 16 and 80 fluid ounces by Messrs. Parke, Davis & Co., London and New York.

Vest Pocket Inhaler.

This little instrument, made of vulcanite, and introduced by Messrs. Parke, Davis & Company, 111 Queen Victoria Street, London, E.C., is greatly appreciated by reason of its simplicity and its portability, and from the fact that it can be used without observation when held in the hand. A bottle of Menthol-Pine Inhalant accompanies the inhaler. This has been found most efficient for hoarseness, catarrh, &c., and can be obtained in larger bottles without the inhaler. The instrument is equally adapted for such medicaments as eucalyptus oil, terebene, &c., which are used to saturate absorbent material through which air is drawn. After use the end pieces can be screwed down so as to prevent escape of fluid or odour. The outfit is inexpensive, easily manipulated and unbreakable.

In Memoriam.

EDWARD HALLARAN BENNETT, M.D., M.Ch., Univ. Dub., F.R.C.S.I., Honorary F.R.C.S. Eng.;

Late Professor of Surgery in the University of Dublin.

ALTHOUGH many months of failing and broken health should have prepared one for the final catastrophe, the news of the death of EDWARD HALLARAN BENNETT came to his host of friends as a very real and personal sorrow and bereavement.

After a long illness, he entered into rest at his residence, 26 Lower Fitzwilliam Street, Dublin, on the morning of Friday, June 21, 1907, aged seventy years. By his death the Medical Profession in Ireland loses one of its most distinguished members, and Irish Surgery one of its ablest and most erudite exponents.

Born on April 9, 1837, at Charlotte Quay, Cork, EDWARD HALLARAN BENNETT was the fifth son of the late Robert Bennett, Barrister-at-Law and Recorder of Cork. His mother was a daughter of William Saunders Hallaran, M.D., of Cork, who, in 1810 and 1818, published two works relating to insanity, which secured for him a high literary reputation. EDWARD H. BENNETT received his early education at Hamblin's School in Cork. He was subsequently educated at the Academical Institute, Harcourt Street, Dublin, a successful school, of which the head master was the late Rev. Dr. Flynn. From this institution he entered Trinity College, Dublin, and in due course graduated (in 1859) as B.A., M.B., and M.Ch. The last-named degree, Master of Surgery, had then been recently created, and BENNETT had the honour of receiving it in company with three distinguished surgeons of the day—James William Cusack, Robert William Smith, and Benjamin George M'Dowel.

EDWARD BENNETT's professional education was carried on in the School of Physic in Ireland, Trinity College, Dublin, and at the Meath, Steevens', the Richmond, and Sir Patrick Dun's Hospitals. On August 17, 1863, he obtained the Fellowship of the Royal College of Surgeons in Ireland without having previously become a licentiate. In 1864 MR. BENNETT succeeded Dr. John Kellock Barton as University Anatomist, and in 1873, on the death of Professor Robert William Smith, he was appointed to the Chair of Surgery in the School of Physic in Ireland. In connection with these University appointments he held the post of Clinical Surgeon at Sir Patrick Dun's Hospital from 1864 to 1906.

As the years passed by many professional honours fell to PROFESSOR BENNETT's lot. Thus he was appointed Consulting Surgeon to Dr. Steeven's Hospital, to St. Mark's

Ophthalmic Hospital (afterwards merged in the Royal Victoria Eye and Ear Hospital), and to the Dental Hospital of Ireland. In 1880 he was elected President of the Pathological Society of Dublin, of which he had been for several years the efficient and energetic Secretary. In 1884 he was chosen President of the Royal College of Surgeons in Ireland, an office which he held for two years, and the duties of which he discharged with dignity and conspicuous success. In 1886 he became President of the Dublin (now the Leinster) Branch of the British Medical Association.

Prior to the year 1882, in which it was established, Professor Bennett took an active part in founding the Royal Academy of Medicine in Ireland, of which he was President for three years, from 1897 to 1900. In the latter year the Honorary Fellowship of the Royal College of Surgeons of England was conferred upon him.

During the Viceroyalty of the Earl of Dudley he was Surgeon-in-Ordinary to His Excellency the Lord Lieutenant of Ireland. For several years after the lamented death of the Rev. Samuel Haughton, S.F.T.C.D., Professor Bennett represented the University of Dublin on the General Medical Council, but failing health led to his resignation of that important post about a year ago, and he was succeeded by Sir Charles Ball, one of the Honorary Surgeons to His Majesty the King in Ireland. Still more recently he resigned his Professorship, to which Dr. Edward H. Taylor was appointed as his successor in November, 1906.

Bennett was a high authority—probably the highest authority of his time—on fractures, a subject which he made particularly his own, and in connection with which he enjoyed a cosmopolitan reputation. Perhaps the most valuable of his contributions to medical literature was a paper on Colles's fracture, read at a meeting of the British Medical Association in Cork in 1879. His life-work may be seen in the unique collection of fractures and dislocations which throws a halo of fame on the Pathological Museum of the School of Physic in Trinity College. It is only fair so say that the foundation of this priceless collection was laid by his predecessor, Professor R. W. Smith, whose most worthy successor Edward Bennett proved to be.

To the pages of this Journal and to the *Transactions of the Royal Academy of Medicine in Ireland*, Bennett contributed numerous papers of sterling merit from time to time, and the fact that he possessed literary powers of a high order makes us all the more regret that he never wrote a treatise on Fractures and Dislocations—a work for which he had collected such splendid material.

Among the articles from his pen which appeared in the pages of this Journal in the earlier years of his career may be mentioned papers entitled "Removal of a Foreign Body from the Larynx by Laryngo-Tracheotomy" (1871), "Examples of True Ankylosis of the Hip-joint" (1874), and "Fractures of the Costal Cartilages" (1876).

In an appreciating memoir of Dr. Bennett, a writer in the *Medical Press and Circular* for June 26, 1907, says:—He was the first to recognise a form of fracture implicating the base of the metacarpal bone of the thumb, and in modern surgical works it is alluded to as Bennett's fracture. When he ceased active work in the University it was decided to perpetuate his memory by means of a suitable memorial. A large sum of money was contributed by his old pupils, a portion of which was set aside to found a money-prize for the candidate who obtained the surgical travelling prize. With the remainder, two medallions, representing Professor Bennett's profile, were struck; one has been placed in the surgical theatre of the medical school in which he lectured; the other occupies a conspicuous place in the hall of Sir Patrick Dun's Hospital. In addition to the medallions, dies were struck for a Bennett Medal, to be awarded to the student coming second in order of merit at the surgical travelling prize examination. The medal is of bronze. On one side Professor Bennett's head is seen in profile and the following inscription:—"In Honorem Edvardi Hallaran Bennett, Prof. Chir., 1906." On the opposite side is represented the metacarpal bone of the thumb showing the fracture associated with his name and the inscription—

"Viri in Fractis Ossibus Collocandis Sollertissimi."

Despite a somewhat halting delivery and an absence of eloquent tongue and lips, Edward Bennett was a capable and a successful teacher. This was due to a masterly acquaintance with his subject and to a quiet enthusiasm which recognised no difficulty as insuperable in prosecuting research and in spreading knowledge.

Professor Bennett married Frances, daughter of Conolly Norman, Esq., of Fahan, Co. Donegal, by whom he had two daughters. The death from pneumonia, on November 29, 1894, of one of his daughters when on the threshold of womanhood was a sore trial to her parents.

This is not the place to speak of Dr. Bennett's many good qualities of heart and mind Suffice it to say that by successive generations of medical students he was both revered and beloved. At all times his skill and surgical knowledge were placed unreservedly at the disposal of the sick poor, not only of Dublin but of Ireland at large.

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

AUGUST 1, 1907.

PART I.

ORIGINAL COMMUNICATIONS.

ART. III.—*Report of the Rotunda Hospital.*[a] By E. HASTINGS TWEEDY, F.R.C.P.I. (Master); ARTHUR HOLMES, M.B., B.Ch., B.A.O.; and ROBERT J. ROWLETTE, M.D.

FOR the compilation of the present report, from November 1, 1905, to October 31, 1906, I have again to thank in chief part my Assistant Master, Dr. Arthur Holmes, for although his late colleague, Dr. Roy Dobbin, gave him some help, he was unable to do as much as he would have wished owing to his appointment to the important post of Professor of Obstetrics in the Cairo University.

The curtailment of Dr. Dobbin's term of office has been a great disappointment to us, and he bears with him into his new sphere of work the unanimous and hearty good wishes of his many friends in the Rotunda Hospital.

The year has produced no radical change in either organisation or technique; indications, however, are not wanting that a greater degree of perfection has been attained in both these particulars. Now that the new wing is nearing completion it is satisfactory to be able to state that its erection in no way interfered with or curtailed the usefulness of the Institution. It is hardly necessary to add that it caused the work to be carried on under difficulties and with much discomfort. Amongst the difficulties encountered during this transition period I may mention that we have been deprived of the use of the disinfecting chamber, and have had to depend upon the well-known methods available in every household for the disinfection of patient's clothing, mattresses, &c. Notwithstanding this inconvenience, our morbidity has still further fallen. This decrease is to be entirely attributed, I believe, to a greater precision in the carrying out of hospital technique and to the zeal and loyalty of our nursing and medical staff.

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[a] Read before the Section of Obstetrics in the Royal Academy of Medicine in Ireland on Friday, May 24, 1907.

The new swing cot-beds, which were introduced last year, have more than justified their adoption ; they have increased the comfort, safety and health of both mother and baby, whilst as a means of training the probationer nurse in the management of babies they have proved invaluable. These advantages have not been gained without greatly adding to the work of the nursing staff, so much so, indeed, that we cannot increase these beds beyond their present numbers (40) until the opening of the new wing provides us with additional nursing accommodation.

A new record has been reached in the delivery of 4,158 women during the year. This increase of 76 is entirely made up from patients delivered in the extern maternity, for the intern maternity stands precisely as it did in the previous year—namely, 1,904 deliveries. This in itself is a remarkable coincidence, but a still more remarkable coincidence is found in the fact that the number of primiparæ delivered—700—is likewise precisely that of the year before.

EXTERN MATERNITY.

In the Extern Maternity there were 2,254 deliveries, a number which sufficiently shows the value of the hospital as a charitable as well as a teaching institution.

From a statistical point of view, however, I must clearly emphasise the fact that the extern maternity stands in a position far inferior to that of the intern maternity. Every effort is made to procure accuracy in details of cases, but where these are collected for the most part by students with only a partial knowledge of their work, the same degree of accuracy cannot be obtained as is found in the report of the intern maternity.

Let it not, however, for a moment be thought that I consider our extern maternity inferior to others in this respect, for I group all observations collected by a number of workers in an extern maternity, be they midwives, students, or qualified doctors, as untrustworthy for the compilation of accurate statistics.

It is for this reason that our extern report is always meagre in comparison with our intern. Following, therefore, our usual practice I shall content myself with a recital and short history of the fatal cases, with a brief report of one other case, which appears to me to be of special interest.

CAUSE OF DEATH.

Septicæmia	4
Ante-partum hæmorrhage	2
Placenta prævia	1
Post-partum hæmorrhage	1
Uræmia	1
Embolism	1
Ruptured uterus	1

MORTALITY.

Case I.—*Accidental Hæmorrhage with Death during Administration of Chloroform.*—13-para, aged thirty-six. It was decided to plug this woman's vagina because of considerable loss before the onset of labour pains. Chloroform was considered necessary for the adoption of this procedure, and shortly after its administration, whilst consciousness was still present, the heart ceased to beat, and the patient died after six ineffectual gasps.

Case II.—*Death from Post-partum Hæmorrhage.*—2-para, aged thirty-three, was seen first after birth of child, the friends not sending to the hospital until fifteen minutes had elapsed after delivery. It was found on arrival that there had been considerable *post-partum* hæmorrhage; patient was pulseless, but all hæmorrhage had ceased. After the collapse had been combated the placenta was removed manually, but the patient shortly afterwards collapsed, and died.

Case III.—*Death from Uræmia.*—7-para, aged thirty-six, was delivered normally. Temperature 101.4° and pulse 100 at time of delivery. The following day the temperature reached 104.4° and the pulse 110. There was general œdema and a large quantity of albumen in the urine, respirations 40, and marked crepitation at the bases of both lungs. The temperature remained about 104°, and the pulse corresponding. The patient died on the fourth day.

Case IV.—*Death from Septicæmia.*—8-para, aged thirty-four. The child was born before arrival. There was some degree of *post-partum* hæmorrhage, and the placenta was removed manually, being morbidly adherent. The pulse was imperceptible, but eventually rallied. The temperature rose slightly, and as it remained above normal the uterus was douched without much effect. On the eighth day the temperature was 100° and the pulse 120. The breasts were tender. An abscess developed, and was opened in the left breast on the tenth day. The respirations became rapid, reaching 36. On the thirteenth day the right breast had to be opened, for a large abscess had formed. Signs of pleuro-pneumonia now set in, and death occurred in a few days.

Case V.—*Death from Accidental Hæmorrhage.*—7-para, aged forty, slight hæmorrhage at term, tense uterus, no fœtal heart heard, pulse quiet, no collapse. This woman refused on two occasions throughout the day to permit the Clinical Clerk to make a vaginal examination. Having been summoned to the house for the third time he found her in a collapsed condition. As there was little external hæmorrhage he judged with correctness that it was concealed. He accordingly plugged the vagina, and removed these plugs in six hours, as labour was in full progress. A dead child was immediately born, and the placenta followed quickly, accompanied by a large quantity of blood clots. In spite of there being no further hæmorrhage the patient died within two hours.

Case VI.—*Death from Unavoidable Hæmorrhage.*—11-para, aged thirty-six, a history of recurrent floodings for five weeks before sending to hospital. The day before attendance was sought she had had considerable hæmorrhage, and this was continuing when she was first seen. She stated that she was about seven months' pregnant. On examination the os admitted one finger, and the placenta was felt. The vagina was accordingly plugged, and the plugs were removed in twelve hours, no labour pains having ensued. The vagina was again plugged, and after a further twelve hours had elapsed the plugs were removed. Labour had not started, but the os admitted two fingers, and, consequently, version was performed as hæmorrhage began. After pulling down the foot the hæmorrhage ceased, labour followed quickly, and the child was born in an hour. There was some *post-partum* hæmorrhage, which was rapidly controlled, but the patient, who was very anæmic from the previous loss, sank and died six hours later.

Case VII.—*Death from Septicæmia.*—7-para, aged twenty-eight; normal labour. Temperature 100.8° and pulse 120 on the second day. Pulse and temperature remained high, despite all treatment, and patient died in a few days.

Case VIII.—*Death from Septicæmia.*—3-para, aged twenty-four; both former pregnancies terminated in difficult labour. On this occasion a shoulder presented. Version was performed, and a foot was brought down. Temperature and pulse on the second day were 105° and 130, respectively. There was marked distension of the abdomen and fæcal vomiting. Patient died on the fifth day.

Case IX.—*Death from Septicæmia.*—7-para, aged thirty-two; normal labour; child born before arrival. The following day the temperature was 102° and the pulse 140. The third day the temperature rose to 103°, the pulse remaining the same. Chloroform was administered and the uterus explored digitally, when an intra-mural fibroid the size of a fist was felt. Phlebitis developed, and, the temperature rising, death occurred on the fifth day.

CASE X.—*Death from Ruptured Uterus.*—10-para, aged forty-three; in labour four and a half hours before sending to hospital; os the size of a florin; head not fixed. Two hours later the head was at the vulva; then no progress for four hours. On arrival of the Clinical Clerk the patient was moribund. Delivery was effected with forceps, the child being dead, and the patient succumbed at once. A large rent was found in the posterior wall of the uterus, the placenta being in the abdominal cavity.

CASE XI.—*Death from Embolism.*—2-para, aged thirty-two; child and placenta both born before arrival. No hæmorrhage; uterus found well contracted, and patient perfectly well. In two or three hours a messenger arrived to say that the patient had died suddenly. No hæmorrhage, and no cause found for death.

INTERESTING CASE.—*Hydrocephalic Monster; Ruptured Uterus with Recovery.*—6-para, aged thirty-two; membranes ruptured at the commencement of labour. At the end of four hours from its onset slight hæmorrhage was seen, accompanied with strong pains, and without any attempt of fixation of the presenting part. In another three-quarters of an hour the pains were strong and continuous, the lower uterine segment was tender, and a marginal placenta prævia felt. A hydrocephalic skull was diagnosticated at this time, and it was perforated. Delivery could not be accomplished until a foot was brought down by internal version. After the birth of the child the placenta was found to have passed into the abdominal cavity through a rent in the posterior wall of the uterus. This was plugged with iodoform gauze, which was left in place for thirty-six hours. Collapse was marked for some time, but the patient eventually made a good recovery

INTERN MATERNITY.

MORBIDITY.

Following our custom of previous years we tabulate our morbidity statistics under two heads. The first is that which we have adopted for the guidance of our medical and nursing staff as being the most ready and most trustworthy indication of the well-being or ill-health of our patients.

Those who have followed with any interest our former Reports will remember that we consider a pulse rising above 90, together with a temperature above 99° F., and continuing above these figures for the space of twenty-four hours—three bi-daily takings—as constituting a morbid state. Furthermore, we exclude the first twenty-four hours after delivery from our calculation, and as our patients as a rule leave on the eighth day we are unable to follow the cases further.

A representative committee appointed by the British Medical Association considered that this method of estimating morbidity was open to some objections as a general index of morbidity available for statistical purposes. They unanimously decided to recommend for adoption amongst the maternities of the British Empire the following simple index of morbidity—a temperature which reaches 100° F. on two occasions between the second and the eighth day. They dealt minutely with many points of detail in respect to the taking of these temperatures. It is unnecessary again to enumerate these, and I shall content myself with the statement that we have endeavoured to carry them out with accuracy.

Our percentage of morbidity as estimated by the Rotunda method has fallen to 4.33 per cent. In last year's report it stood at 6.67 per cent., and in the previous year at 10.70 per cent. These figures present an accurate picture of the progressive improvement in the health of our patients. We had one death through sepsis of a very severe type. It occurred at a period free from hospital morbidity, and its origin could not be traced. Save for this we had no serious septic illness of any kind. It frequently happens that days, and even periods over a week, are now observed in which there is not a single case of morbidity recorded, judged by either method.

Calculating according to the British Medical Association's standard, morbidity is much higher—8.43 per cent.—a figure which is but a slight improvement on that of last year, 8.77 per cent. The difference between these two last sets of figures fails to do justice to the real and sustained improvement in the health of the hospital.

My late Assistant Master, Dr. Dobbin, made an analytical study of two months having the greatest morbidity. I submit his analysis, which includes all cases of morbidity calculated by either standard or by both standards.

For a clear understanding of this analysis it is well to explain the abbreviations :—

Eng. = British Medical Association's morbidity index.
R.H. = Rotunda Hospital.
Both = Morbid by both methods.
L.P. = Lacerated perinæum.
V.D. = Vaginal douche.
V.O. = Vaginal observation.
P.V. = Vaginal examination.
I.U.D. = Intra-uterine douche.

Total No. of cases delivered	147
No. of 1-para	57
No. of X-paras	90

April.—Morbidity Cases.

Eng. = 13 = 8.84 per cent.
R. H. = 10 = 6.80 „
Both = 10 = 6.80 „

Length of Time in Hospital of Morbidity Cases.

Eng.	13	8	13	0	24	11	12	12	13	10	15	8	0
R. H.	13	0	13	12	24	0	12	12	13	10	15	0	8
Both	13	0	13	0	24	0	12	12	13	10	15	0	0

1-paras = 8 = 14.03 per cent.
X-paras = 5 = 5.55 „

Analytic Study of Cases of Morbidity.

1-para—L.P.	R.H.	8 days in.	Fissured nipple, left breast. V.O. 2 P.V.
1-para—L.P.	Eng.	8 days in.	Swollen legs and feet; albuminuria; 4th and 6th, even. (2-coccus found.) V.D. 9th even. I.U.D. Organised blood clot and decidua came away. 1 P.V.
1-para—L.P.	Eng. & R.H.	15 days in.	Breech-prolonged labour; I.U.D.; 3 times; membrane and clots got away.

4-para	Eng. & R.H.		Œdema of right foot and leg; albuminuria 7th evening, rigor. 8th morning—I.U.D. and culture (nothing found); quantity of decidua and blood clot. 8th evening—I.U.D. repeated; more debris; 10 days in. 1 P.V.
1-para.	Eng. & R.H.	13 days in.	Culture; st. albus; large; 2-coccus; small bacillus. No P.V.
1-para—L.P.	Eng. & R.H.	12 days in.	Sixth evening—I.U.D. nothing resulted; culture = 0; erythema 6th evening. No P.V.
3-para.	Eng. & R.H.	12 days in.	Contracted pelvis (Tyrrell): occipito post.; forceps; 3rd evening I.U.D. = 0 culture = small 2-coccus and large bacillus. 1 P.V.
1-para.	Eng & R.H.	11 days in.	Condylomata syphilitica; ovum expressed whole; 6½ months. No P.V.
3-para.	Eng. & R.H.	24 days in.	P.P.H.; I.U.D. 4 times; clots and debris, fœtid, got away. No P.V.
3-para.	R.H.	12 days in.	Adherent placenta; manual removal; I.U.D. 4 times. 1 P.V.
1-para.	Eng. & R.H.	13 days in.	I.U.D. 4 times; membrane came away; culture + No P.V.
6-para.	Eng.	8 days in.	I. U.D. culture = large 2-coccus. 1 P.V.
1-para—L.P.	Eng. & R.H.	13 days in.	I.U.D. 4 times; once fœtid. return. No P.V.

Total No. of cases delivered	156
No. of 1-paras	49
No. of X-paras	107

June.—Morbidity Cases.

Eng. = 22 = 14.10 per cent.
R.H. = 9 = 5.76 „
Both = 9 = 5.76 „

Length of Time in Hospital of Morbidity Cases.

Eng.	8	11	9	14	13	9	11	10	13	13	10	9	8	12	14	8	16	8	8	8	9	15	18
R.H.	0	0	0	0	13	0	0	10	13	13	0	9	0	0	14	0	16	0	0	0	9	15	18
Both	0	0	0	0	13	0	0	10	13	13	0	9	0	0	14	0	16	0	0	0	9	15	18

1-para . . . . . = 13 = 26.53 per cent.
X-paras . . . . . = 10 = 9.34 „

Analytic Study of Morbidities.

2-para—L.P.	Eng. & R.H.	15 days in.	No P.V. V.D.
1-para	Eng. & R.H.	9 days in.	Severe hæmorrhoids - I.U.D. No P.V.
1-para—L.P.	Eng.	8 days in.	V.D.; retained membranes. No P.V.
11-para	Eng. & R.H.	16 days in.	Macerated fœtus; albuminuric; V.D.; I.U.D.; retained membranes. No P.V.
3-para—L.P.	Eng.	8 days in.	I.U.D. fragments and clots came away. No P.V.
7-para.	Eng.	8 days in.	I.U.D. No P.V. Erythematous rash, legs and shoulders.
8-para—L.P.	Eng.	8 days in.	Macerating surfaces on legs; V.D. 1 P.V.
1-para—L.P.	Eng. & R.H.	14 days in.	Albuminuric; swollen legs; twice I.U.D. 1 P.V.
1-para—L.P.	Eng.	12 days in.	I.U.D. 1 P.V.
2-para.	Eng.	8 days in.	V.D. No P.V.
1-para—L.P.	Eng. & R.H.	9 days in.	V.D.; retained membranes. No P.V.
1-para—L.P.	Eng.	10 days in.	Retained membrane came away No P.V.
1-para—L.P.	Eng. & R.H.	13 days in.	Twice I.U.D.; clots came away. No P.V.
2-para—L.P.	Eng. & R.H.	13 days in.	Twice I.U.D.; retained placenta got away; c finger. No P.V.
3-para—L.P.	Eng.	10 days in.	Alveolar abscess opened; pus by fœtid; I.U.D. No P.V.
1-para.	Eng.	11 days in.	Forceps; twins; highly albuminuric; V.D. 1 P.V.
3-para.	Eng.	9 days in.	I.U.D.; placental debris. No P.V.
7-para—L.P	Eng. & R.H.	13 days in.	Adherent placenta; manual removal; P.P.H.; V.D.; I.U.D. some clots; I.U.D. some placental debris. 1 P.V.
1-para—L.P.	Eng.	14 days in.	I.U.D.; placental debris; c finger and curette. No P.V.
4-para.	Eng.	9 days in.	V.D.; I.U.D.; fœtid retained lochia. No P.V.
1-para—L.P.	Eng.	11 days in.	V.D.; tendency to puerperal ulcer. No P.V.
1-para—L.P.	Eng.	8 days in.	Before V.D. membranes came away; V.D., more membranes; I.U.D. placental debris got away; 2- I.U.D. = negative. No P.V.

What at once strikes us in looking over Dr. Dobbin's figures is the number of perineal lacerations associated with slight conditions of morbidity. This, too, is obviously the reason why primiparæ so enormously exceed multiparæ in respect to morbidity.

HYPEREMESIS GRAVIDARUM.

This condition arose in three instances. In one it was associated with hydramnios (*vide* Hydramnios), and ceased after labour had been induced on account of the dyspnœa caused by that condition. The patient, a 4-para, was eight months pregnant.

The second patient, a multipara, six and a half months pregnant, had suffered from persistent vomiting for a fortnight before admission. She was in a wretchedly emaciated state, and was severely constipated. Turpentine enemas were administered, followed by saline injections. Food of any sort was prohibited for the first twenty-four hours, but at the expiration of that time small quantities of pepsined whey were borne, and finally milk pudding was retained. The patient insisted on leaving hospital before her cure was complete, and we have since lost sight of her.

The third case occurred in a multipara, eight months pregnant. She suffered from an abscess of the vaginal wall. It was opened, and the sickness promptly ceased.

ECLAMPSIA.

Eight of our patients developed eclampsia, and in three of these the condition appeared after delivery.

Case I.—A. F., primipara, aged twenty-five, developed five fits within three hours after the termination of the third stage of labour. Her mental convalescence was slow, and she remained sluggish for several days. Urine contained albumen, blood and casts, both granular and hyaline. She was discharged on the fifteenth day with some slight albuminuria remaining.

Case II.—M. J. B., 2-para, aged twenty-six, admitted, January 7, with slight swelling of the lower limbs and considerable albuminuria. She was eight months pregnant, but no fœtal heart could be heard. Two days after admission she developed eclampsia, and had four fits within an hour. On recovering consciousness she declared she could see nothing. In twenty hours from the onset of the first fit labour completed itself, a macerated child being born. The day following delivery she had another slight fit, but her progress from this on was most satisfactory, and she left the hospital on the thirteenth day in a normal condition in respect to both eyesight and general health.

CASE III.—M. G., primipara, aged eighteen, delivered, January 22, of living twins, had three slight fits starting seven hours after delivery. The urine was albuminous, and mild morbidity persisted until the ninth day. She was discharged cured on the eleventh day.

CASE IV.—M. M., primipara, aged nineteen, was seized with an attack of vomiting on February 23. This was followed by two severe convulsions in rapid succession, and her condition on arrival at hospital was one of deep coma. Fifteen more fits took place, and about fourteen hours after admission the os was found fully open with the head fixed in the brim and the membranes unruptured. A large macerated child was then delivered by forceps. No fits occurred after the birth of the child, but the woman remained for two days in a comatose state with urine loaded with albumen. She was discharged cured on the seventeenth day, but subsequently returned to the dispensary suffering from an enormous galactocele. This was probably of traumatic origin, having arisen from the piercing of a milk-duct by the transfusing needle. Persistent pressure and aspiration on several occasions failed to bring about relief, and eventually it was found necessary freely to lay open the cavity and to plug with iodoform gauze.

CASE V.—B. S., 2-para, aged twenty-six, delivered, March 8, of a living child at term. She appeared very stupid on admission, and five hours after the completion of the third stage a fit occurred, followed in an hour by a second fit. She left hospital on the eighth day with pulse and temperature normal, but with albuminuria persisting.

Case VI.—E. H., primipara, aged twenty-five, admitted in labour at term on July 18. Œdema of the legs and slight albuminuria were present. She developed a severe eclamptic convulsion, and as the os was fully dilated with the head low down a living child was extracted by means of forceps. The case was further complicated by a purulent vaginal discharge of gonorrhœal origin. Morbidity remained until the seventh day, but she was discharged from the hospital cured on the ninth.

Case VII.—M. O. D., 2-para, aged thirty-three, was admitted because of prolongation of the second stage of labour and because of the occurrence of an eclamptic fit. A brow presentation was diagnosticated, and a dead fœtus was extracted by forceps. She left the hospital cured on the eighth day. It is interesting to note that this woman had had eleven fits during her previous confinement.

Case VIII.—This case occurred during my absence from hospital on sick leave. It was one of exceptional severity, and ended fatally. (See Maternal Mortality, Table No. X, Case 8.)

HYDRAMNIOS.

There were seven cases of hydramnios. In one, a male, anencephalic fœtus with spina bifida was present; in a second there were stillborn twins, male and female; the hydramnios was associated with the male fœtus in the first sac; in the third, living female twins, with the second sac involved. Two children, a male and female, were macerated, whilst in the remaining two cases the children, both males, survived birth but a few hours. Thus two out of nine children alone left hospital alive.

Dyspnœa was a marked symptom in two cases, and necessitated induction of premature labour by rupture of the membranes in each instance at the eighth month. All the women were multiparæ, two were 4-paræ, and the condition in one was complicated by hypermesis.

ABORTION AND PREMATURE DELIVERY.

Our sixty-six cases of this condition show an increase of twenty-seven as compared with last year.

When possible the uterus was permitted to empty itself of its contents by natural efforts; active interference was only undertaken because of the presence of dangerous hæmorrhage or of a fœtid discharge.

In two of these cases slight morbidity occurred, while in the others temperature and pulse ran an absolutely normal course.

HYDATIFORM MOLE.

Our patient, a 9-para, aged forty-eight, had missed three periods. She noticed that her abdomen was rapidly becoming larger, and she attributed her symptoms to change of life.

A globular tumour reaching to the umbilicus was felt on bi-manual examination. It was accompanied by all the softening conditions of pregnancy, but the feel of the uterus did not give the impression of one that contained a fœtus.

A diagnosis of hydatiform mole was made, and this was confirmed three hours afterwards when she expelled the mass spontaneously. The puerperium was uneventful.

HYDRORRHŒA GRAVIDARUM.

Under this head we describe one case.

A 6-para, aged thirty-three, seven months pregnant, complained that for nine days a watery and blood-tinged discharge had flowed from her continually. She appeared weak and anæmic, and we became apprehensive in respect to her condition. The vagina was accordingly plugged; the plugs were removed after eight hours, as labour was in full progress, and a puny child was delivered in three hours after their removal.

The woman suffered from glycosuria, and the infant survived its birth for eight days.

ACCIDENTAL HÆMORRHAGE

This complication was met with six times in the course of the year. In five, where the hæmorrhage was external, recovery took place. The remaining case was a typical and terrible example of concealed accidental hæmorrhage. (*Vide* Maternal Mortality, Table No. X., Case 6.)

PLACENTA PRÆVIA.

There are six cases of this condition to record.

The placenta was felt on vaginal examination in all cases save one. In this case the patient was advanced in labour, and suffered from *ante-partum* hæmorrhage. On the birth of the head, portion of the placenta was found lying in front of it.

Marginal placenta occurred in two cases, in one of which a dead child was born nineteen minutes after the turning operation, while in the other labour had well advanced, and no treatment was required.

Placenta prævia centralis was diagnosticated in the remaining three cases, and they were all treated by podalic version. One of these entered the hospital in a shockingly collapsed condition. She had travelled that day from Mullingar, and had bled continuously throughout the journey. She survived but a short time after version. (*Vide* Maternal Mortality, Table No. X., Case 2.)

HERNIA OF THE GRAVID UTERUS.

The following is a remarkable case of pregnancy occurring in a uterus which formed the contents of an irreducible ventral hernia:—

E. D., 11-para, aged forty, was admitted to hospital, December 22, 1905, in labour. She stated that an abdominal operation had been performed some eighteen years previously, and in her subsequent pregnancy she noticed a protruding swelling in her abdomen. This swelling, she noticed, did not disappear after childbirth, and increased greatly in size when she next became pregnant. The delivery, however, in both cases was uneventful. The present pregnancy was the third since the operation. A round dumpling-like tumour, with a constricted neck, lay beneath the abdominal skin, and overhung the pubes. The skin had ulcerated in several places, and these ulcers were discharging foul matter. The floor of one of these ulcers was uterine muscle. Fœtal movements were distinctly felt and seen, and when the woman assumed the erect position the fundus lay in a plane greatly below the lower uterine segment. As labour had already begun, and fearing septic infection, the ulcers were covered with lint soaked in creolin and kept in position by adhesive plaster. We did not for one moment contemplate that the woman could empty her uterus by natural efforts, but the unexpected happened, and within three hours of her admission a living child was born, weighing 3½ lbs. After its birth the uterus could not be returned into the abdomen, and the placenta being firmly adherent was removed, though with considerable difficulty. The case was complicated by some *post-partum* hæmorrhage. An uneventful puerperium followed, and in spite of every endeavour she insisted on leaving hospital on the tenth day, the ulcers still unhealed. The history was one of full term pregnancy, and the child, though small, presented all the appearances of one at term. It is probable that its small size was due to the constriction of the uterine arteries by the ring of the hernial sac.

PROLAPSE OF FUNIS.

This occurred in ten cases, all the children save one (a premature delivery) being born alive.

The cord prolapsed in two women, whose labour was induced at the eighth month, once in a brow presentation, and twice in breech. The complication necessitated delivery by forceps four times, and version was performed successfully in the brow case.

POST-PARTUM HÆMORRHAGE.

There were fifteen cases of this variety of hæmorrhage in the year. Expression of the placenta terminated hæmorrhage in five of these cases. In the other five it was found necessary manually to remove the placenta.

Atony of the uterus accounted for two cases, in one instance following the birth of twins, and in the other, forceps delivery for prolonged second stage. For one of these the uterus was plugged with iodoform gauze, the vagina with cotton wool, and abdominal pads, held tightly in position by binders, fixed the uterus in acute anteflexion over the pubes. A hot uterine douche proved effective in the other.

Traumatic hæmorrhage was met with twice, bleeding being easily controlled by sutures.

We had one case of secondary hæmorrhage six hours after removal of the placenta.

Hypodermic injections of ergotinin were administered as a routine treatment in all the cases, the dose varying from the $\frac{1}{30}$ to the $\frac{1}{25}$ of a grain.

APPLICATION OF FORCEPS.

Forceps was applied in fifty-one instances. (*Vide* Table No. VII.)

INDUCTION OF PREMATURE LABOUR.

This operation was undertaken eleven times—twice for severe dyspnœa and cardiac distress due to hydramnios, twice for severe and persistent albuminuria with eye trouble, and seven times for contracted pelves, with a fœtal mortality in the latter series of four.

In the presence of this large fœtal mortality I feel that I have laid myself open to criticism in respect to my treatment of these cases, and there is no doubt that the advent of pubiotomy has already rendered premature induction of labour for contracted pelves obsolete.

I was formerly much prejudiced against this operation, and for the first two years of my Mastership induction of labour was but rarely brought about. I believed that labour induced after the thirty-sixth week had no effect in making the birth less difficult, and that if performed earlier than the thirty-second week the chances of procuring a living and healthy child were too remote to make the operation justifiable. I held, and still hold, that it is impossible to estimate with accuracy the age of the child, and I argued that the range of the period in which induction was advisable was too narrow to render it an operation of precision.

My predecessor, Dr. Purefoy, has, on the other hand, always been a staunch advocate for this line of treatment, and holds the view that labour may be induced even within a few days of full term. He argues with much truth that we have no guarantee that a woman will not carry her child for many weeks beyond full term; and this, as a matter of fact, actually occurred in one of my own cases, where I failed to procure a living child delivered through a conjugate diameter of 9.5 cms. because of its enormous size. In this case, as well as in another in which I similiarly failed, Dr. Purefoy had previously succeeded by the induction of premature labour. I was, naturally, impressed by his successes, and determined to give induction a fair and extended trial.

Our present aseptic precautions, and more particularly the wearing of rubber gloves and the insertion into the uterus of bougies, which have been boiled in and impregnated with solution of corrosive sublimate, have rendered the operation practically free from any danger to the mother, and could similar results be obtained in respect to the child, the procedure would be in every respect ideal. It still is, and will long remain, I believe, the operation most suitable for the general practitioner who is unable to avail himself of the advantages offered by an up-to-date hospital.

Case I.—S. F., 3-para, aged thirty-four, flattened rachitic pelvis, conjugate vera 7 cms., had labour induced in the thirty-sixth week of pregnancy. Aseptic bougies were inserted and the cervix tightly packed with gauze soaked in sterile glycerine. The bougies were removed in twenty-four hours and the process repeated. In forty-eight hours the cervix began to be taken up, and the os became partially dilated. The head, however, showed no sign of fixing, and version was performed when the patient was in labour for twenty-four hours. A stillborn child was extracted with difficulty. (*Vide* Case 2, Table No. VII.)

Case II.—M. K., 11-para, aged forty-three, had labour induced for the eighth time at the end of the thirty-seventh week of pregnancy. She suffered from an exostosis springing from the posterior wall of the pubes. Labour started twenty-four hours after the adoption of means similar to those above stated. The membranes ruptured before the os was fully dilated and a fœtal leg presented. Delivery followed a natural course as far as the shoulders, but great difficulty was experienced in the delivery of the after-coming head, which showed a deep indentation of the left parietal bone. The child's arm was found paralysed shortly after the birth, but this showed marked improvement before its discharge from hospital. (*Vide* Case 3, Table No. VII.)

Case III.—E. K., 6-para, aged twenty-seven, conjugate vera 9 cms., had had labour induced on two previous occasions. She entered hospital the thirty-ninth week of her pregnancy, and we endeavoured to induce labour by the usual means. This was successful after forty-eight hours, and membranes ruptured early, but pains were very weak, and she continued in a condition of lingering labour for thirty hours. Forceps were then applied through an os three-quarter dilated, and a stillborn child was extracted. (*Vide* Case 5, Table No. VII.)

Case IV.—S. M., 3-para, aged twenty-three, admitted in the thirty-seventh week of pregnancy, conjugate vera 7.2 cms. Labour started thirty hours after the introduction of bougies and gauze, and membranes ruptured early, but the head showed no sign of fixing after many hours. Exhaustion as indicated by a rising temperature and pulse induced us to hasten delivery, and this was accomplished by podalic version. A stillborn child weighing seven and a quarter pounds was extracted. (*Vide* Case 7, Table No. VII.)

Case V.—T. M., 3-para, aged twenty-eight, admitted with a history of difficult former labours—forceps with the first, version with the second; both children dead. The patient was in her thirtieth week with a conjugate vera of 7 cms. Labour started seventeen hours after bougies were inserted, and the child was born by breech twenty-four hours later. Delivery was not difficult, but the child was dead when extracted. (*Vide* Case 8, Table No. VII.)

Case VI.—J. F., 3-para, aged twenty-four, in the thirty-eighth week of pregnancy, conjugate vera 7.7 cms. Previous children had been born dead by instrumental deliveries. Pains began eight and a half hours after the insertion of bougies. In six hours after its commencement the membranes ruptured and the cord prolapsed. Delivery was hastened by pressure on the fundus, and a living child was born. (*Vide* Case 9, Table No. VII.)

Case VII.—G. L., 1-para, flattened pelvis, conjugate vera 7 cms. Repeated insertion of bougies on different occasions for three days failed to induce labour pains. This method was accordingly abandoned, and in its place an ounce of sterilised glycerine was injected between the membranes and the uterine wall, the vagina was plugged and a tight binder applied. Labour started in two and a half hours, and in another two hours a living child was born, the arm and head presenting together. (*Vide* Case 12, Table VII.)

CASE VIII.—F. M., 1-para, aged twenty-three, admitted in the twenty-sixth week of pregnancy because of dimness of vision, œdematous labia, and partial suppression of urine. Our consultant oculist, Dr. F. C. Crawley, reported that the woman suffered from staphyloma with atrophic choroiditis in both eyes. Bougies were introduced, but were withdrawn in twenty-four hours, as labour had not begun; sea tangle tents were then inserted, and their efforts to induce labour were supplemented by hot douches and plugging the cervix with iodoform gauze. A living child was born four days after the first efforts at induction. Albumen, which was present in great quantity before the birth of the child, diminished in a marked manner throughout the puerperium, and she left the hospital with eye symptoms much improved.

CASE IX.—*Vide* Hydramnios.

CASE X.—*Vide* Hydramnios.

CASE XI.—A. F., 3-para, aged thirty, admitted during her twenty-sixth week of pregnancy complaining of dimness of vision and scanty urine. The latter contained blood, and was loaded with albumen. Dr. Crawley reported the presence of albuminuric retinitis of both eyes, and we accordingly induced labour by inserting bougies. This operation took five days to complete. The patient's improvement was rapid and marked, in respect to both kidney symptoms and eyesight, but we have failed to follow her subsequent history.

PODALIC VERSION.

This operation was performed eleven times during the year. Placenta prævia was the indication in four cases (*vide* Table No. VI.). It was adopted twice to bring about delivery in contracted pelvis where premature labour had been induced (*vide* Table No. VII.). Version was performed three times for brow presentation and twice for transverse presentation.

CÆSAREAN SECTION.

We had only one of these operations throughout the year, and this in a woman whom we had previously delivered in a similar manner.

Case.—M. H., aged twenty-nine, 2-para, admitted in a very early stage of labour. Operation was immediately undertaken, because we feared complications from rupture of the old scar. With a view to ascertain whether the fine silk which had been buried in the abdomen and in the uterine wound had or had not disappeared, incisions were made through the old cicatrices; no adhesions were found, and with difficulty the original uterine incision could be localised, being much easier felt as a depressed surface than seen. The placenta was in front, and bled freely on being cut through. A living fœtus was extracted, and the operation completed without special complication, save for the fact that the peritoneum and rectal fascia had firmly united, and were brought together by one continuous silk suture. To add strength to this union a few interrupted silk-worm gut reinforcing sutures were applied. The child, a female, seven and a quarter pounds, was nursed from the breast from the third day. (*Vide* Case 1, Table No. VII.)

Note.—No trace of the original silk could be seen.

MANUAL REMOVAL OF THE PLACENTA.

This operation was performed twenty times, gloves being worn on all occasions. It was sometimes found necessary to pass a sterile gauze wipe into the uterus, for this device enables the gloved hand to peel the placenta or membranes from the uterine wall.

Post-partum hæmorrhage was the indication in five cases, and adherent placenta in all the others. Secondary *post-partum* hæmorrhage occurred in one case, but was promptly stopped by a hot intra-uterine douche.

HYPOSTATIC PNEUMONIA.

S. W., a primipara, aged fifteen, was delivered at term on February 11. She had previously been a patient in Adelaide Hospital, suffering from mitral stenosis. On the seventh day of the puerperium the temperature, which had been previously normal, rose to 101° F., and later on in the day to 105.4° F., pulse 120. A troublesome cough developed, and the sputum was blood-stained. The heart was extraordinarily tumultuous, with loud double mitral murmur, the cardiac area tender to pressure, and the apex beat depressed downwards. Temperature and pulse remained high for several days, but gradually fell until the 26th day, when the temperature was normal, with pulse 92.

Our Consulting Physician, Dr. James Little, was unremitting in his care and attention, and though the case was in every way a terrible one, complicated by sleeplessness and wild maniacal attacks during the height of the disease, the patient was able to leave the hospital in a convalescent state four weeks after delivery.

MANIA.

Three women developed mania.

Case I.—3-para, aged twenty-seven, a very anæmic woman, developed a high temperature and pulse on the second day of the puerperium, a culture taken from the uterus proving sterile. Urinary analysis revealed nothing abnormal. On the fifth day the patient developed wild maniacal symptoms with screaming fits. Under the influence of large doses of sedatives she gradually became quiet, and temperature fell to normal on the seventh day. Iron was administered for the anæmia, and the remainder of the puerperium was uneventful.

Case II.—E. K., aged thirty-four, 11-para, was admitted with hæmorrhage due to an incomplete abortion. *Delirium tremens* developed on the fourth day, but subsided under the influence of full doses of bromide. She was discharged cured on the tenth day.

Case III.—M. K., 1-para, aged twenty-one, became maniacal on the sixth day, her delivery and puerperium up to this having been quite normal. It was necessary to feed her for several days by means of the stomach-tube. She had to be removed to an asylum on the fourteenth day.

EPILEPSY.

A 3-para, aged twenty-seven, had an epileptic seizure on the sixth day of the puerperium. She had been under treatment for this disease for three years.

URTICARIA HERPETIFORMIS OF DÜHRING.

This condition was diagnosticated by Dr. Wallace Beatty, who kindly saw the patient in the absence of Dr. James Little.

It arose in a primapara, aged twenty-two, who had eaten a large meal of tinned salmon the day before admission. The temperature remained irregular for the first four days, never reaching to 100° F., but being, nevertheless, above normal. A red rash at the expiration of this period appeared on her abdomen and flexor aspect of her limbs; it spread rapidly over the entire body, which became covered with blebs thirty-six hours later, some of which were as large as 3 × 10 inches, and were filled by turbid serum.

Her temperature reached a maximum of 103.6° on the fourteenth day, symptoms gradually subsided, and she was discharged completely cured one month after delivery.

MATERNAL MORTALITY.

There were eight deaths during the year.

CAUSES OF DEATH.

Placenta prævia	1
Pyæmia	1
Typhoid fever	1
Concealed accidental hæmorrhage	1
Eclampsia	1
Labour shock	3
Total,	8

PLACENTA PRÆVIA.

CASE I.—E. C., aged forty, 11-para, admitted, March 16, in a collapsed condition, with pulse barely perceptible at wrist. She had travelled that morning from Mullingar, and had walked from the Broadstone Terminus to Arran Quay, where a friend of hers lived, and in whose house she fainted. She had been bleeding continuously for several hours, and her clothes were soaked with blood. She fainted four times before admission to hospital. On a diagnosis of marginal placenta being made bi-polar version was performed, and every effort made to rouse her from her collapsed state. Hæmorrhage was entirely checked after her admission to the hospital, but in spite of every effort to restore her she died in three hours.

CASE II.—E. N., primipara, aged twenty-eight, was confined normally on May 12. Her perinæum was lacerated and required stitching. The puerperium was uneventful until the seventh day, when her pulse and temperature went suddenly up. On the following day they had fallen to 101.6 and 108° respectively, and this after a vaginal douche had been given. A foul-smelling uterine discharge developed and indicated a uterine douche, and at the same time a culture was taken for microscopic examination. In this was found a large diplococcus, a small diplococcus, and a bacillus. Temperature and pulse remained continuously high, and on the thirteenth day the patient had a rigor, and rigors from this time constantly recurred until her death on June 25. Her uterus, which was explored on the third day of her illness, contained a quantity of broken-down endometrium, but no placental or membranous tissue. The pathological finding showed clearly that pyæmic infection was the cause of death.

CASE III.—Primipara, aged twenty-one, was admitted in labour, and was suffering from a fast pulse and high temperature. Her delivery was normal, and her general condition suggested typhoid fever. Her blood was subjected to Widal's test, and gave a positive reaction (1 in 80). Temperature ran the usual typhoid course, and she died on the eighteenth day of the puerperium. The intestines showed typhoid lesions.

CONCEALED ACCIDENTAL HÆMORRHAGE.

This is the first typical case of concealed accidental hæmorrhage which I have ever seen, and I cannot believe that a case such as this is amenable to any known form of treatment.

Case IV.—The patient, aged thirty-five, 11-para, was admitted on August 8 from the extern maternity with the following history:—She had gone out early on the previous morning with a small child in her arms, and had become very drunk. On arriving home late at night she was remonstrated with by her husband, and, though she was at the end of the eighth month of pregnancy, she attacked her husband and some others in the house, and had to be wrestled with and held down with violence. Shortly after this scene she became very weak, and fainted several times. Help was then sought from the Rotunda, and our students found her abdomen tense and tender, and very hard. There was no trace of external hæmorrhage, but both arms and legs were covered with large bruises. The fœtus could not be felt. Having no doubt that we were dealing with a case of concealed accidental hæmorrhage, I gave orders that the vagina should be plugged and a tight abdominal binder be applied, in the belief that such a line of treatment would directly control the blood flowing through the uterine arteries. In addition to this the usual methods were adopted for restoring patients from shock. On visiting the woman some time afterwards I found blood had begun to flow from the uterus, and had saturated the plugs. Knowing that hæmorrhage cannot penetrate vaginal plugs when properly applied I removed them, and proceeded to replug the vagina myself. In this I experienced unexpected and surprising difficulty, for the reason that the intra-uterine pressure had caused complete obliteration of the fornices, and the pledget instead of remaining where placed, as it usually does, was immediately driven out. It was only by fixing the first plug by my finger that I could get a second into position, and thus working I forced back the fornices into their normal positions, and then proceeded to finish the operation in the usual manner, which has been fully described in previous reports. In five hours time labour contractions were observed, and though no further hæmorrhage appeared the woman's condition was continuously becoming worse, and this in spite of all the known methods which were tried to combat collapse. The plug was now removed, and the os found fully dilated; forceps were asked for, but before they could be got ready the woman had delivered herself naturally of a dead child. The birth of the child was followed by the placenta and a large quantity of dark blood-clots. The uterus was sharply anteflexed, and pressure on the aorta exerted to prevent any further hæmorrhagic loss, which was absolutely insignificant in amount. Venous saline infusions, oxygen, stimulants and artificial respiration proved utterly unavailing, and the patient died one hour after delivery.

ECLAMPSIA.

For the notes of this case I am indebted to my Assistant Master, who was acting for me in my enforced absence from the hospital due to a broken wrist.

Case V.—M. G., 2-para, aged twenty-eight, seven months pregnant, was admitted from the extern department at 3 a.m. on October 14. She had suffered from a severe headache all the previous day, and at 8 p.m. on the 13th she had a fit, followed by two others. A midwife was sent for, and whilst she was there eight other fits occurred. The relatives then sent to the hospital, and after the arrival of our Clinical Clerk two more fits occurred. The patient was just conscious between the attacks, and resisted treatment. Morphin ½ gr. was given, and at 12 50 a.m. on October 14 she was transferred to hospital, and had a fit in the ambulance. Immediately on admission at 3 a.m. she had another fit, and again another three-quarters of an hour later. The stomach was washed out, but contained nothing; she had been vomiting all the day before. The bowel was also washed out. Purgatives—castor oil, 2 ozs. croton oil, min. 4, were administered, and morphin ¼ gr. was injected at 4 a.m. Quarter of an hour later a fit occurred, followed in forty minutes by another; again in an hour, and again in three-quarters of an hour. The patient was comatose with stertorous respiration. Morphin ¼ gr. was given at 6 30 a.m. A fit occurred at 7 10 a.m., and another at 8 a.m. Then there was no other fit until 10 15 a.m. Enemas were given, and house mixture by the stomach tube, and another injection of morphin ¼ gr. Fits occurred at 10 30 and 11 5 a.m. The pulse was 132. The patient became then very cyanosed. Oxygen was administered and artificial respiration carried on. The lungs were becoming œdematous, also the tongue. Hot packs had been placed on the loins and changed frequently. There was no sign of labour. The pulse ceased suddenly at

3 p.m., and the patient died. Twenty-six fits had occurred in all, of which thirteen had taken place before admission. The urine was bloody and loaded with albumen.

LABOUR SHOCK.

There remains to be reported three deaths, each bearing a strong resemblance in respect to causation, one to the other. I have, accordingly, grouped them together.

It has been a matter of considerable difficulty with me to classify these cases, and after careful consideration of the subject I have arrived at the conclusion that "labour collapse," or rather "shock," is the term by which they should be described.

The fact that in each there was a hæmorrhage slightly in excess of normal would suggest *post-partum* hæmorrhage as a possible explanation. In none, however, was the hæmorrhage profuse or greater than is constantly observed in so-called normal deliveries. It would therefore be inaccurate and entirely misleading to classify them as *post-partum* hæmorrhage.

CASE I.—A. H., 7-para, aged thirty-four, was delivered normally on March 3. There was no external hæmorrhage during the third stage, but the expulsion of the placenta was followed by a slightly excessive retro-placental blood collection, and again by a small amount of hæmorrhage which necessitated the stimulation of uterine contractions by abdominal massage and the administration of a drachm of ergot by the mouth. In two hours' time the patient's aspect was noted to have changed for the worse. About four ounces of blood clot was expressed from the uterus, and a further drachm of liquid extract of ergot administered hypodermically. Whiskey was given by the mouth, but this she immediately vomited. She dozed on and off for four hours, and during this time received a drink of water. At the end of this time she showed marked symptoms of collapse; the pulse became weak, and was 140 beats per mintue. I was immediately sent for, but on my arrival in the labour ward I found her in an almost unconscious condition and in such profound collapse that she made no effort to respond to all the restorative methods within our knowledge.

Case II.—M. K., a primipara, aged thirty, delivered herself after a protracted labour, due to early rupture of the membranes. The placenta was slow in coming away, and the blood loss was slightly in excess of normal. The patient appeared perfectly well for two hours, and showed no sign of anything going wrong. Breathing then became difficult, and collapse followed. Some clots not large in quantity being expelled from the uterus, the latter was douched and explored with the finger, and finally tamponed with iodoform gauze, as it did not contract readily. It was impossible to rouse the patient by stimulation, and she died four and a half hours after the birth of the baby. Her face was somewhat cyanosed, and she did not appear exsanguinated.

Case III.—E. H., 5-para, aged twenty-six, normal delivery with protracted third stage, lasting sixty-five minutes, and associated with some hæmorrhage. There was no further loss after expression of the placenta. The patient, however, showed some signs of collapse, with pulse 140. She did not improve under treatment, and had become unconscious half an hour after the birth of the placenta. She never rallied, and died in an hour's time. This woman was miserably delicate and anæmic, and in parting with her husband at the gate lodge expressed her conviction that she would never see him again.

INFANTILE CONDITIONS.

Complete absence of the radius and thumb on both sides was present in an eight months' child, which also had an imperforate anus. The infant survived birth a very short time.

A case of peculiar interest was one of intussusception occurring in an infant on the second day. The child then began bleeding freely from the bowel, and eventually died. The condition was discovered *post-mortem*, the bowel being very inflamed at the site of the intussusception and containing blood-clot.

It is of interest to note that in the case of an eight months' fœtus slightly macerated the Spirochæta pallida of syphilis was found in the liver in enormous numbers.

Table No. I.—*Maternity Department.*

—	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries	131	149	150	138	157	145	178	150	163	160	167	150	1,838
Total abortions	4	5	9	1	3	2	3	6	7	12	8	6	66
Not in labour	22	27	21	17	29	17	37	25	27	52	52	32	358
Total	157	181	180	156	189	164	218	181	197	224	227	188	2,262

Table No. II.—*Out-Patients.*

Number of first attendances	4,769
,, repeated ,,	6,682
Special Dispensaries	2,388
Total	13,839

Table No. III.—*Showing Nature and Number of Cases in Extern Maternity.*

Total deliveries	2,254
Abortions	287
Presentations—	
Face	5
Face to Pubis	13
Brow	4
Breech and Footling	77
Transverse and Oblique	15
Compound	1
Twins	41
Hæmorrhage—	
Accidental	10
Unavoidable	15
Post-partum	29
,, ,, secondary	1
,, ,, traumatic	1
Operations—	
Forceps	42
Versions	29
Manual removal of Placenta	19
Perforation	2
Hydatidiform mole	1
Carneous ,,	1

Hydramnios	7
Prolapse of Uterus	1
,, ,, Funis	5
Retro-verted incarcerated uterus	1
Rupture of uterus	2
Fibroid uterus	5
Complete laceration of Perinæum	1
Mastitis	5
Phlegmasia	4
Maternal mortality	11
Infantile Conditions—	
Spina bifida	1
Hydro-cephaly	5
Meningocele	1
Talipes	4
Intra-uterine amputation of arm	1
Congenital Œdema	1
Maldevelopment of Mandible	1
Ophthalmia	2
Pemphigus	1

TABLE NO. IV.—*Showing Nature and Number of Cases Treated in Intern Maternity.*

Total admissions	2,262
„ deliveries	1,904
Abortions	66
Hydatidiform mole	1
Primiparæ	700
Presentations—	
Face	4
Face to Os Pubis	8
Brow	5
Breech and Footling	35
Transverse and Oblique	2
Compound	1
Twins	23
Prolapse of Funis	10
Lacerated Perinæum, incomplete	490
Lacerated Perinæum, complete	—
Hyperemesis	3
Hydramnios	7
Myoma of uterus	4
Hernia of gravid uterus	1
Deformed pelves	13
Hæmorrhage—	
Accidental	6
Unavoidable	6
Post-partum	15
„ „ Secondary	1
Operations—	
Forceps	51
Version	11
Induction of labour	11
Cæsarean section	1
Manual removal of placenta	20
Phlegmasia alba dolens	3
Puerperal ulcer	2
Mastitis	4
Galactocele	1

Eclampsia	8
Mania	3
Pneumonia	1
Typhoid	1
Urticaria herpetiformis	1
Epilepsy	2
Morbidity (B.M.A., suggested estimate)	8.43
Morbidity (Rotunda estimate)	4.33
Maternal Mortality	8
Infantile mortality—	
Died in Hospital	30
Premature	20
Recent	30
Macerated	41
Infantile conditions—	
Anencephalus	3
Spina bifida	2
Ophthalmia	4
Melæna	3
Cleft palate	2
Hare lip	1
Imperforate anus	1
Absence of radius and thumbs	1
Talipes	5
Spontaneous facial paralysis	1
Traumatic paralysis of arm	1
Secondary hæmorrhage from cord	1
Intussusception	1
Hæmorrhage into ant. chamber of eye	1
Capillary nævus	1
Webbed fingers	1
Convulsions	1

TABLE NO. V.—*Accidental Hæmorrhage.*

Name	Age and Para	Date	Variety	Treatment	Result to Mother	Result to Child	REMARKS
M. G.	39, IX.	1905 Dec. 7	External	Tight binder	Recovery	Alive	Spontaneous delivery. Child followed at once by placenta and clots.
K. C.	41, VII.	1906 Feb. 3	External	Forceps	Recovery	Dead	Full term child. Bleeding for two days previously. Patient in labour.

(*To be continued.*)

ART. IV.—*A Case of Acute Metastatic Gonorrhœal Myositis, with Remarks on the Diagnosis and Treatment of this Affection.*

By CHARLES GREENE CUMSTON, M.D., Boston, Mass.

THE report of this case is given merely on account of the rarity of muscular complications of gonorrhœa; rarity, I assume, because the most recent books on genito-urinary pathology, by Fuller, Leedham-Green and some French authors do not mention it, while Casper and White and Martin, in their sixth edition, barely refer to it.

The history of the case is briefly as follows:—

In the middle of May, 1904, I was asked to see a young man, twenty-seven years of age, by Dr. J. Henry Woods, of Brookline, who gave me the following history:—The patient, who had returned from Europe in the latter part of April, developed an acute gonorrhœa on the steamer two days after leaving port. During the remaining five days occupied in the completion of the voyage the patient treated himself merely by diet and rest, as he did not wish to consult the ship's surgeon, and, immediately upon his arrival, sought his physician, who found a well-developed acute gonorrhœa. The treatment consisted in balsams and mild permanganate of potassium irrigations.

By May 7 the acute symptoms had subsided, the discharge had become whitish and the patient was feeling better, when, without any apparent cause, on May 10, the patient complained of a feeling of malaise, and the temperature rose to 39.5° C. At the same time he experienced a sharp pain in the biceps of the right arm. This condition of affairs became more exasperated, so that on May 15 I was asked to see the patient in consultation.

Examination showed the biceps of the right arm somewhat tumefied and excruciatingly tender on pressure. The skin was normal in colour, and the local temperature apparently not increased. Both the elbow and shoulder joints were perfectly free from any inflammatory process. A diagnosis of metastatic myositis was made. As to treatment, mercurial inunctions were ordered once daily, and the limb was enveloped in towels wrung out in hot water and covered by rubber dam, to be changed as soon as cool, while internally ten drops of ol. gaultheriæ was given three times a day.

To make a long story short the patient slowly recovered under this treatment, so that by the end of June he had regained the use of his arm almost completely, although the muscle was somewhat tender on pressure. The patient was seen again at the end of September of same year, and recovery was found complete, there being no evidence of either muscular atrophy or of degeneration.

As far as I have been able to ascertain, metastatic muscular complications of gonorrhœa appear to be relatively benign, while in the case of the other metastatic myositides, suppuration is very prone to occur, while in milder cases various forms of muscular degeneration or atrophy appear to be the final outcome. In some rare cases the general symptoms assume such seriousness that death of the patient may result. In the gonorrhœal form general systematic disturbances are very moderate or may even be wanting, while the pain, although intense during the early stages of the affection, soon disappears completely, or nearly so.

The diagnosis of this affection should, I believe, be considered somewhat at length, because, as far as I am aware, it has been little discussed. In point of fact, there are many morbid manifestations which may deceive the clinician. In the first place, ordinary muscular rheumatism, with its attending pain and functional incapacity, is liable to come to one's mind. It is, however, quite probable that gonorrhœa, which gives rise to articular pseudo-rheumatism, may also give rise to an infection of some muscle or group of muscles having a pseudo-rheumatismal appearance. The presence of a fresh urethral infection or the lighting up of an old uncured gonorrhœa will indicate the exact nature of the muscalar manifestations.

In secondary syphilis muscular pain and pain in the tendons is far from infrequent, and may be generalised and more or less persistent. In this case, one is dealing with a true syphilitic myalgia, the nature of which offers no doubt when the patient presents cutaneous or mucous manifestations of the disease, nocturnal headache and so forth, while, when these are not present, the action of a well directed specific treatment will settle the diagnosis in a large majority of cases.

The question of diagnosis will only become a matter of some delicacy in those rare instances where the patient is afflicted simultaneously with both gonorrhœa and syphilis.

The condition of the digestive functions should always be carefully looked into, as the case recorded by Jullien and Sibut amply demonstrates, and is a very striking example of a truly typhoid condition that a patient may present in gonorrhœal myositis. As space forbids I will not relate this case, but would refer those interested to the transactions of the Urological Society of France, 1897, in which the case was published. In these cases the temperature and the abdominal symptoms must be carefully studied, but there are certain special procedures which will also remove all doubt.

In point of fact it is known that Widal's test will always give a negative result in the case of gonorrhœa, while the palmar-plantar sign, which is frequently encountered in typhoid patients, has always been wanting in cases of severe gonorrhœal infection that have been studied up to the present time. I might add that it would be interesting to ascertain whether or not Ehrlich's diazo-reaction is as constantly negative in gonorrhœa as it has been found to be in syphilis.

A myositis of the recti abdominalis, with a maximal point of pain over the appendix, accompanied by hardness of the muscle, might lead one to favour a diagnosis of appendicitis. In some cases an inflammatory process in the adnexa might be mistaken for a myositis of the abdominal muscles, but besides a bi-manual palpation, which will give us the exact condition of affairs of the tubes and ovaries, one will never find in these cases the same violent muscular rigidity that is encountered in myositis.

An adenitis occurring during a gonorrhœa might very well be mistaken for a focus of myositis, because, like the latter, it is met with in the form of a more or less large, indefinite, tumefaction, and quite painful to pressure; but enlarged glands will always be present in their ordinary anatomical situation, and will never be found in a muscle.

Arthritis and periarthritis are always accompanied by an enlargement of the joint; movements are impossible, at least temporarily so, while in myositis motion is hindered and even painful, but is always possible. And lastly, ankylosis and atrophy are probably never met with in myositis of the gonorrhœal type, while in this type of arthritis they are not infrequent. In the gonorrhœal form of myositis there is never any superficial œdema or the hard and painful cord so characteristic of phlebitis. It is also by the limitation of the pain to a well-defined course, generally quite long, which will prevent one from mistaking myositis with a neuritis, which also is made evident by special symptoms, such as tingling and trophic disturbances.

And lastly, myositis of the deep muscles can very well be mistaken for an acute osteomyelitis, but in the latter affection one will find a more or less deep-seated, painful swelling and a certain number of symptoms of a general character whose gravity far exceeds anything met with in gonorrhœal myositis.

Although the diagnosis of gonorrhœal myositis is sometimes more or less delicate, the same cannot be said of its treatment. In the first place, judging from the literature on the subject, it may be inferred that massage is to be absolutely proscribed. Camphor liniment and methyl salicylate do not appear to give any marked results, but tincture of iodine appears to have given some relief in certain cases. However, in the majority it has been without effect, and consequently may, we think, be discarded. Sodium salicylate, antipyrine and potassium iodide taken by mouth appear to have no action, and have merely caused gastric disorders, while, on the other hand, ol. gaultheriæ, taken several times a day at the dose of ten drops, appears to have some soothing, although not curative, effect.

I am inclined to believe that damp heat, in conjunction with inunctions of mercurial ointment, will shorten the cause of the affection more quickly than any other means we have at our disposal, and this line of treatment was certainly as efficacious as could be expected in the case here reported. It may be given either in the form of towels wrung out in hot water and covered with rubber dam or by local baths given three or four times daily, the diseased member being retained in the water for an hour. It goes without saying that proper treatment should be directed against the urethral affection.

ART. V.—*Blackwater Fever.*[*] By CHARLES THOMAS COSTELLO, B.A., M.B., B.Ch., B.A.O., M.D. Univ. Dub.; Medical Officer, Northern Nigeria, West Africa.

HISTORY AND ÆTIOLOGY.

HÆMOGLOBINURIC fever, better known as "Blackwater Fever," is a most serious disease, which is found in certain parts of tropical Africa, in Assam, the East and West Indies, the hotter parts of America, and in the south of China It was first described as a distinct and very characteristic disease by French naval surgeons stationed at Nossibé, off the north-west coast of Madagascar.

Some Europeans are more susceptible to this disease than others, and either sex may be affected, while negroes seldom acquire it. But there are records to show that the Chinese labourers have suffered from blackwater fever.

It cannot be said that our knowledge as to the cause of this disease is precise, but it is usually believed to occur in a person whose system has been saturated with malarial fever and quinine; and Sir P. Manson considers the phenomena of blackwater fever to be brought about by the fact that the poison of malaria attacking the red blood corpuscles renders their hæmoglobin apt to become unstable, and that quinine in large doses having a similar action, it is conceivable how the liberation of the hæmoglobin in the parasite-affected red blood corpuscles takes place, especially if quinine has recently been given injudiciously.

Other great authorities, such as the Plehns and Koch, are of opinion that quinine predisposes, and even causes, hæmoglobinuria. As regards this latter theory, certainly large doses of quinine administered suddenly to a patient who has had repeated attacks of malarial fever, but has been treated by small and regulated doses of quinine, may bring about hæmoglobinuria, as quoted by the Plehns and Koch, but the cause in such a case would appear to be brought about by the injudicious administration of a large dose of quinine, and not by quinine given in moderate and regular doses so as to allow the system to accommodate itself to the drug.

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[*] A Thesis for the Degree of Doctor of Medicine in the University of Dublin.

Some lay great stress as to the time one has been in the affected country and the general condition of the individual as acting as predisposing factors to blackwater fever, while others are of opinion that time and state of health are not essentially predisposing causes.

Sambon points out that it is possible the Pirosoma bigeminum of the hæmoglobinuric fever of cattle may also be the factor of this disease.

No definite parasite of blackwater fever has been isolated; but possibly it is one specifically different from that of malaria, and, infecting an individual who is in a very anæmic state from malarial fever or otherwise, it falls on a soil suitable to cause a shedding of hæmoglobin in the affected red blood corpuscles.

Again, it seems probable that blackwater fever is a disease allied to malaria, and induced by malaria and quinine saturation in one who is susceptible to the disease, with resulting hæmoglobinuria.

SYMPTOMS.

Hæmoglobinuria may occur in the course of a malarial attack, or the patient who has had a history of previous attacks of malarial fever may note the recurrence of the well-known signs of fever coming on, although some give evidence to the fact that these early symptoms are not quite the same. The onset of this disease is sudden, the patient being seized with violent rigors, lasting for some time, to be followed by fever varying from the remittent, intermittent or irregular type, and vomiting of a severe and especially bilious character, and there may be bilious diarrhœa or constipation.

Usually about this period the patient feels severe aching pains in the region of the liver and loins, and also over the bladder, and on passing water, urine of a very dark-black colour or of a Malaga tinge is noticed. The nausea and vomiting in some cases are very distressing, rendering it a difficult matter for the patient to retain nourishment, and this, in conjunction with the amount of blood passed in the urine, causes the individual to be very weak and anæmic. Sometimes before the appearance of the dark colour in the urine, at other times coincidently, the skin acquires an icteric tinge—a very prominent symptom, becoming more marked as the fever proceeds.

The fever continues, though not as a rule very high, and the "blackwater" may last for two or three days, the fever gradually subsiding, the patient having previously perspired freely and feeling very weak.

Relapses, however, are apt to occur on each rise of temperature, and the disease may continue with intermissions for several days, or even weeks, at the end of which time the patient is in a very anæmic and dangerous condition, with a possible sequela in nephritis, which may attack the patient three to five weeks or so after all signs of "blackwater" have vanished. But in favourable cases, on the subsidence of the fever, the urine comes more freely, and passing through various shades eventually takes on more of its normal appearance. The urine of blackwater is very characteristic, and is of a dark-brown colour, usually acid in reaction, and if allowed to stand in a beaker for some time two distinct layers will form, an upper of a dark port wine appearance, and a lower one, occupying from one-half to one-third of the entire volume, of a brownish-grey colour. In the lower layer there is a sediment formed of hyaline and hæmoglobin casts; epithelium and blood corpuscles may be present or absent. Serum globulin is also present, and on heating in a test tube in many cases the urine turns almost solid. This coagulum, as it subsides, carries with it the dissolved hæmoglobin, and leaves above it urine of a pale-yellow colour.

In severe cases death usually follows, and is brought about by (1) the fever taking on a typho-adynamic type, or cerebral or hyperpyrexial symptoms may supervene; (2) heart failure, symptoms of a sudden and profuse hæmorrhage appearing—namely, restlessness, sighing, sweating and syncope; (3) suppression of urine, followed by uræmic convulsions and coma; (4) lastly, nephritis attacking the patient about one month subsequent to cessation of blackwater, when the case ends fatally owing to uræmia.

TREATMENT.

The patient, on the earliest signs of blackwater, should be put at once to bed and kept very warm, five grains of calomel, followed by salts, should be administered, and hot fomentations applied to the loins, but if these are not to be obtained (as may happen in some bush stations) a couple of cholera belts or cotton wool answers as well. Warm bland drinks, such as barley water, ought to be frequently given, and a milk diet until the albumen has disappeared from the urine. Brand's essence or bovril may then be given, and stimulants in the form of champagne and brandy as soon as the case in point may require them.

One of the particular dangers is the vomiting. In very bad cases rectal feeding is necessary, and also copious injections of warm water or salt solution per rectum. These injections, if retained, are very useful, as they not only wash out—so to speak—the infarcts of hæmoglobin from the renal tubules, and so help to prevent suppression of urine, but they also increase the amount of fluid in the vascular system, and by so doing improve the arterial tension, aid the heart in its contractions, and consequently lessen the chance of syncopal attacks or death from failure of the heart. The patient should be encouraged to drink as much water as possible, even if he does vomit some, to assist in the above results of injections, whether rectal or injected by means of a hollow needle into the subcutaneous tissue of the flank. Intravenous injection of saline solution has also been tried.

The question as to the advisableness of administering quinine in this disease is a matter of controversy, the Plehns, Koch and others being quite against its administration, while others maintain that it is the proper medicinal treatment for hæmoglobinuria. Bastianelle is of opinion that, if blackwater appears during an ordinary malarial attack and parasites are found in the blood, quinine should be given; and, on the other hand, if parasites are not found in the blood and quinine has been given prior to the blackwater coming on, then in these cases quinine is contraindicated. However, it is now generally agreed to adopt the Plehns' opinion to withhold quinine during the attack, but to resume it cautiously when the blackwater symptoms have disappeared and the case has become one of an ordinary simple intermittent fever.

Boric acid as an adjuvant should also be tried. Other drugs, such as calomel in large doses, salicylate of sodium and tannic acid, have been lauded in various parts of West Africa, but the evidence on the whole is against the opinion that any drug is, in our present knowledge, directly a specific against blackwater fever.

Any signs of heart failure should promptly be attended to by stimulants, and on no account should the patient leave bed for any reason, as the bed-pan should invariably be used, and the patient should also be warned as to the great danger of assuming a sitting posture in bed, which, when left alone, some patients are apt to do.

PRECAUTIONS AGAINST BLACKWATER FEVER.

Persons who are stationed in those parts of tropical Africa, or other places, in which this disease occurs, ought never to make light of fever, however small, but should, as soon as a premonitory sign of fever, or fever itself, shows itself, at once go to bed for treatment.

In the interpyrexial periods prophylactic measures should be adopted in the form of quinine regularly taken, also a tonic, consisting of iron, to improve the quality of the red blood corpuscles. The individual should try as far as practicable to avoid excessive exposure to the sun or rain.

It must be borne in mind that blackwater fever occurs in the British Isles amongst subjects who have been previously living abroad in a blackwater area, and consequently people ought to be informed of this fact and put on their guard against contracting chills, especially when changing from a tropical to a temperate climate on the voyage homewards. Moreover, they should be advised not to fail to take quinine and a tonic if necessary while on leave.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A System of Medicine by Many Writers. Edited by THOMAS CLIFFORD ALLBUTT, D.Sc., F.R.S., Regius Professor of Physic in the University of Cambridge; and by HUMPHRY DAVY ROLLESTON, M.D., F.R.C.P., Physician to St. George's Hospital. Volume II. Part I. London: Macmillan & Co. 1906.

THE second volume of the second edition of Professor Allbutt's system, as already announced, is to make its appearance in two parts, and the first of these is now presented. It differs from the original second volume principally in containing the article on "The General Pathology of Infection" and in the omission of the articles on "Tropical Diseases" and on "Animal Parasites." These two last-named sections are to make their appearance later in a separate volume.

To thoroughly review a book of the present dimensions, containing, as it does, over 1,000 pages, and dealing with so many subjects, would be quite impossible, so we must content ourselves with remarks on a few only of the important articles that it contains.

Dr. Ritchie's contribution on "The General Pathology of Infection" occupies the first couple of hundred pages, and is the largest single contribution. It has been brought thoroughly up-to-date, and constitutes an admirable account of our present knowledge of the subject. Full attention is paid in it to the various extra and intra-cellular toxins of bacterial origin, and to the important subject of the standardisation of antitoxins. In this connection Ehrlich's side chain theory is very fully discussed, and the recent knowledge concerning the actions of cytotoxic serums, and the general bearing of this knowledge on the theories of immunity in general is dealt with.

Amongst the more recent facts, also, that have been brought to light we find that Wright's researches on the opsonic properties of the blood serum receive mention, and that it is recognised that these researches suggest the possibility of the formation of opsonin apart from the wandering cells of the body. The article is admirably clear and concise, and withal complete, but the facts dealt with are so complex that the closest attention is required in perusing it. The whole subject indeed is, apart from its practical applications, more of interest to the pathologist than to the medical practitioner, and consequently we think that the section will be regarded by the latter more as a repository where the latest views on any particular serum that he may be interested in may be found than as a chapter to be mastered.

In the article on syphilis the principal change that we note is the acceptation of the *Spirochœta pallida* as the specific parasite of the disease. Mr. Hutchinson does not anticipate that the discovery will add much to the results of clinical observation, but hopes that it may in future aid diagnosis and lead to modifications in treatment. No mention that we could find is made of the discovery of the same organism in cases of yaws, nor can we find in this article any reference to the acute painless effusions that may occur into joints in the early stages of acquired secondary syphilis, and we must suppose that this omission is due to the author not having met with such cases. That they occur, however, is undoubted, and as they may cause considerable difficulty in diagnosis we regard the failure to notice them as a mistake. In view of recent expressions of opinion on the subject of syphilis and marriage, the author's adherence to his two-year rule is of interest, as is also his statement that "in this matter the profession should take the part of the reassurer and not of the alarmist." The advice given on this matter is, in our opinion, most sound.

The pathological section of the article on rheumatic fever has been written by Dr. Bullock, and contains, under the heading bacteriology, an excellent criticism of the old and recent researches that have been carried out in connection with this disease. The writer holds that the problem of the ætiology of acute rheumatism has not yet been solved. and in especial he denies that the so-called *Micrococcus rheumaticus* can be proved to produce experimentally specific effects.

The bacteriology of scarlet fever is regarded as being in the same position, and although Mallory's researches are referred to, the writer, Dr. Dudgeon, very wisely, refrains from putting much credence in the *Cyclaster scarlatinalis* as the morbific agent.

The last article that we will mention is that on the "Co-existence of Infectious Diseases," and is from the pen of Foord Caiger. It is most interesting and instructive. The author holds that clinical experience tends to show that the presence of one disease in the body increases the liability to the infection of another. This is generally accepted with regard to chronic degenerative disease; but with certain exceptions, such as the admitted association of scarlatina and diphtheria, is less widely held with regard to acute infections. The author has collected some valuable statistics bearing on the point, and shows that in 8.49 per cent. of cases the convalescent stage of acute disorders is complicated by the appearance of a second infective disease.

In conclusion, it is idle to recommend the book, as the reputation of the first edition precedes it, and is stronger commendation than anything we could say.

Prevalent Diseases of the Eye. A reference handbook especially adapted to the needs of the General Practitioner and the Medical Student. By Samuel Theobald, M.D. With 219 Illustrations and 10 Coloured Plates. Philadelphia and London: W. B. Saunders Company. 1906. 8vo. Pp. 551.

The author, in his preface, lays stress upon the fact that "although most treatises upon diseases of the eye have been written ostensibly for the general practitioner and the medical student, they have been, with few exceptions, adapted in reality not to their needs, but to the requirements of the specialist in this department of medicine.

"A treatise upon the eye really intended to meet the needs of the general practitioner should take into account the fact that the great majority of physicians are not skilled in the use of the ophthalmoscope, and are not likely ever to be; that they possess neither the experience nor the necessary paraphernalia to make trustworthy tests of refractive errors, of muscular anomalies, or of the visual fields; and that they are not qualified to perform, and have no desire to undertake, the more delicate eye operations.

"It should recognise, further, that because of these limitations the general practitioner is hopelessly handicapped as regards diagnosis, and consequently the treatment of many important eye affections; but, on the other hand, that there are other important affections of the eye which he is competent, or should be competent, to diagnosticate correctly and to treat successfully. It should, therefore, devote special attention to this latter class of maladies, and, particularly, should help him to discriminate between these cases and those which are without his province, so that, on the one hand, he may not send trivial affections, which he is himself competent to treat, to the distant specialist; or, on the other hand, lose precious time, and thus permit sight to become irreparably damaged, through attempting to cope with maladies which urgently demand the skill of the trained ophthalmologist."

The author, therefore, has aimed at producing, not a complete treatise upon diseases of the eye, but a concise description of the commoner ocular maladies designed solely to meet the needs of the physician engaged in general practice. For such a work he feels sure there is a real want.

He has performed his very difficult task with great care and ability, and has produced a very readable volume, printed in good large type on good paper, and well illustrated.

With all that he says we do not, of course, agree. On page 75, for instance, he recommends a *crucial* incision to be made for the removal of chalazions, and follows this up by applying *solid* silver nitrate to the cavity and then a flax-seed poultice on the lids on the second night! We are not surprised to find him remark that "considerable inflammatory reaction follows the operation." He advocates the use of large probes in the treatment of chronic dacryocystitis; styles he finds useless, and of excision of the lacrymal sac he has no experience, and says that he has seldom encountered csaes where it seemed to be demanded. Again, amongst the methods of treating entropion with trichiasis, no mention is made of transplantation of mucous membrane from the mouth, the simplest and most permanent of all the operative procedures.

But in spite of these and many other matters with which we are not entirely in agreement the book very fairly supplies the want which its author believes to exist.

In the appendix the author gives some stock prescriptions, which will be found useful at times.

TWO WORKS ON DIAGNOSIS.

1. *Physical Diagnosis, including Diseases of the Thoracic and Abdominal Organs.* By EGBERT LE FEVRE, M.D.; Professor of Clinical Medicine in the University and Bellevue Hospital Medical College. Second Edition. Revised and Enlarged. Illustrations—102 Engravings and 16 Plates. London: Hodder & Stoughton.
2. *Medical Diagnosis.* A Manual of Clinical Methods for Practitioners and Students. Fifth Edition. Enlarged and Revised. By J. GRAHAM BROWN, M.D., Assistant Physician, Royal Infirmary, Edinburgh; and W. T. RITCHIE, M.D., Clinical Assistant Pathologist, Royal Infirmary, Edinburgh. With 200 Illustrations and 8 Plates. Edinburgh and London: William Green & Sons. 1906.

THERE is apparently a fashion in medical books as in everything else, and for the past twelve months the general leaning of publishers and writers has been towards works on medical diagnosis and towards *résumés* of the theory and practice of medicine. This, at any rate, is true as far as the text-book style of work is concerned and as far as a reviewer can speak from the works that pass through his hands. Two books on diagnosis are at present before us, while half a dozen others recline and will long recline, unopened on our shelves, now that the task of "noticing" them has once been done. The subject has been treated from every point of view, as is indicated in the varying titles adopted, but yet there is a wonderful similarity, or rather, we would say, a tedious sameness, about them all. We have previously stated our personal opinion as to the value of most of these books to the qualified physician, but the books must fill some void, if only a physical one, else the output of new and repeated editions must have long since slackened. It is our duty, therefore, to inform the public whether the volumes before us are accurate or not in the statements they detail, but no criticism of the facts dealt with is required, because most of them are like the letters of the alphabet—accepted and beyond query or doubt.

1. The first volume is entitled "Physical Diagnosis," and is a revised and enlarged second edition. It is well printed on good paper and is well illustrated, the illustrations including some really fine radiographic productions of the injected bronchial system. It is divided into five parts, the first of which is a short summary of the surface anatomy of the thoracic and abdominal viscera. Parts II. and III. deal respectively with the physical diagnosis of pulmonary and cardiac lesions; Part IV. with the physical examination of the abdominal contents, and Part V. is a very brief account of the uses that may be made of X-rays in medical as opposed to surgical diagnosis.

The volume, as a whole, is readable, and we have no doubt will prove useful to students. As it has reached a second edition it has apparently justified its existence, and, indeed, seems to have been one of the earlier of the modern books of this style. It differs from most of them in its exact limitation to a description of the uses and applications of physical methods.

2. The second volume to be dealt with bears the more ambitious title of "Medical Diagnosis," and is in its fifth edition. It contains chapters on physical diagnosis as applied to the chest, the abdomen and the nervous system, and also chapters on the examination of the urine, gastric contents, blood and sputum; while the last fifty pages are devoted to clinical bacteriology and cyto-diagnosis. The book has been brought up-to-date, as evidenced by the fact that it contains a series of sphymograms representing the events that occur in different

varieties of heart-block, and that it also contains a good account of the method of making an opsonic determination. The figures are numerous and useful, though some of them—as, for example, that on p. 224—are far from ornamental.

The book is a good and accurate guide for clinical clerks, and will, we have no doubt, maintain the popularity of the previous editions.

Refraction of the Eye, its Diagnosis and the Correction of its Errors, with a Chapter on the use of Prisms. By A. STANFORD MORTON, F.R.C.S. Seventh Edition. London: H. K. Lewis. 1906. 8vo. Pp. 96 + viii.

WE are pleased to see that the popularity of this most excellent of treatises still continues. We have so often before expressed the opinion that it is the clearest, most concise and intelligible statement of its subject with which we are acquainted, that we have only to state that the seventh edition is in every respect equal to, and in many respects superior to, its predecessors, and that the addition of the chapter on the use of prisms is a most valuable one.

We can highly recommend this lucid, cheap, and handy little brochure.

Ulceration of the Cornea. By ANGUS MACNAB, F.R.C.S. With 20 Illustrations. London: Baillière, Tindall & Cox. 1907. Demy 8vo. Pp. xiv + 196.

THIS most valuable addition to ophthalmic literature is dedicated to Professor Th. Axenfeld. It is, as the author states in his Preface, an attempt to state the present position of our knowledge of corneal ulcers—no task could be more difficult, no task more necessary—and we have nothing but praise for the manner in which Dr. MacNab has accomplished his most troublesome undertaking.

We are in a transition stage between the old clinical, unscientific classification and the new bacteriological and scientific arrangement, which is still far from complete, but which promises, before long, to bring order and harmony out of discord and chaos.

In our opinion the "attempt," as the author modestly terms it, has resulted in a most important addition to our systematic and intelligent knowledge of a most complex and bewildering section of ophthalmology. It was necessary that we should have a knowledge not only of what is known, but also a knowledge of what is unknown. Dr. MacNab has been careful to point out clearly the blanks in our knowledge, and has thus indicated the many fields still open for useful investigation and original research.

The style is clear and remarkably free from ambiguities; the volume is well got up, and will give a good return for any time expended in its perusal.

TWO WORKS ON THE DISEASES OF WOMEN.

1. *A Text-Book of Diseases of Women.* By J. CLARENCE WEBSTER, B.A., M.D. (Edin.), F.R.C.P.E., F.R.S.E.; Professor of Obstetrics and Gynæcology in Rush Medical College; Gynæcologist to the Presbyterian Hospital and Central Free Dispensary; Consulting Gynæcologist to the Passavant and St. Anthony's Hospitals, Chicago. Large 8vo of 12 pages, with 372 Text Illustrations and 10 Coloured Plates.

2. *Diseases of Women.* A Clinical Guide to their Treatment. By GEORGE ERNEST HERMAN, M.B., F.R.C.P.; Consulting Obstetric Physician to the London Hospital, &c., &c. Pp. xvi + 900. With 265 Illustrations.

1. DR. WEBSTER may be congratulated heartily upon the result of his work as embodied in the latest American Text-book of the Diseases of Women. In writing it he tells us that he has endeavoured to keep the following aims before him—To give prominence to the scientific basis of each subject under consideration; to study clinical phenomena in their widest relationships; to insist upon caution in the adoption of therapeutic measures not yet properly tested; and to give emphasis to methods which have proved satisfactory in the author's experience. Dr. Webster appears to us to have been successful in his

efforts, and the book before us is one that can be studied with advantage and profit.

Dr. Webster in his preface very properly emphasises the importance of the specialist refraining from concentrating his attention exclusively on the local pelvic condition, without regard to wider physical and psychical relationships. This is a very proper warning, and though perhaps it may be more necessary in America than in this country, it is none the less worthy of attention.

The book is written on correct scientific principles. It is modern in its teachings, and altogether is most suitable for the general practitioner or the specialist.

2. We have on a previous occasion reviewed Dr. Herman's "Diseases of Women" at length in these pages, and there is nothing in the present edition to lead us to alter anything we then wrote. To put our opinion in a nutshell, it is impossible to regard the book as a serious exposition of the best work of the modern London gynæcologist, whilst to term it a representative British book is still more impossible.

Dr. Herman himself does not seem to take his offspring seriously. His work is the work of one who trifles with his readers under the belief that they will neither want nor appreciate anything better than he gives them. How else can the style or the teaching of the following sentences be explained? Speaking of "Preliminaries" of ovariotomy, Dr. Herman writes:—"Let the person who is to give the anæsthetic choose which he will give, for he is responsible for it. Let the patient be anæsthetised lying down on a table, and let the instruments be covered or kept out of sight until she is unconscious. When she is unconscious put her in the Trendelenburg or raised pelvis position. . . . Next wash the abdomen and symphysis pubis with soap and water, and shave the mons veneris. If it be not shaved the dressing is likely to stick to the hair. Patients greatly dislike having it done, therefore say nothing about it, but do it when the patient is unconscious. Some put on to the belly a mackintosh sheet with an oval hole cut in the middle, and bordered with sticking-plaster. This means leaving dirty marks on the skin which have to be washed off with oil. Some lay towels, wrung out in carbolic solution, across and lengthways, so as to surround the site of operation. I prefer to put mackintoshes above and below the part required to be exposed, and on these a large towel, soaked in carbolic solution, and having a hole cut in the middle."

Again, speaking of operations for the repair of the perinæum, he writes:—"Mr. Lawson Tait has recommended a way of putting in the stitches which makes the operation a quicker one, but brings with it a liability to abscess of the recto-vaginal septum, therefore I describe it not."

Again, speaking of Alexander's operation of shortening of the round ligaments:—"The great objection to Alexander's operation is its risk, the danger to life, and the danger of a long illness, with suppuration of the wounds. . . . This detachment" (of the ligaments) "together with the tension which is put on them, seems to lower their resisting power, and make them liable to inflammation. This inflammation may lead to deep suppuration, which may spread to the peritoneum, and thus fatal peritonitis follow a week or so after the operation."

Such teaching reminds one forcibly of another work on gynæcology, and, curiously enough, one also written by a London specialist, in which operators who are daring enough to draw down the cervix as a preliminary to curetting and such operations are warned that as a result "they must be prepared for rises in temperature after some of their operations, with occasional fixing of the uterus by inflammatory deposit."

We have no doubt that Dr. Herman's work will receive very different notices to this in other journals. So much the worse for London gynæcology. The antecedent to improvement is dissatisfaction, and the spirit of self-satisfied superiority which brands Dr. Herman's work as good because it is written by an eminent London teacher is the same spirit which has in the past enabled London teachers to occupy with complacence the lowest position in the long bead-roll of those who have raised gynæcology from what it was to what it is.

Surgery of the Rectum. By FRED C. WALLIS, B.A., M.D., B.C. Cantab., F.R.C.S.; Surgeon to Charing Cross Hospital, St. Mark's Hospital, and the Grosvenor Hospital for Women and Children. Fifty-five Illustrations. London: Baillière, Tindall & Cox. 1907. Pp. vii + 165.

THIS book, the author tells us in the preface, is intended to present the surgery of the rectum of the present day in a practical and condensed form to young surgeons and practitioners.

In a book of this size one can only expect to find an account of the methods and ideas formed by the author's personal work, and on this the value of the little book depends. The author reminds us rather forcibly of his personal work in the following taken from the Preface :—" The first five chapters contain my original views of the cause and treatment of most of the inflammatory affections in and around the rectum. These views are gradually being accepted, and when they are more widely known I believe they will facilitate both the diagnosis and treatment in these cases. The operation for excision of hæmorrhoids has been described fully. My experience of this operation is now an extensive one, and I differ from most recent writers on this subject in that I believe it is, under proper surroundings, the best operation for this malady."

After reading the above we were rather surprised to see that the operation referred to was that recommended by Whitehead over twenty-five years ago. According to the author the " danger of stricture does not exist, provided proper after-treatment is carried on. Usually a small cicatricial ridge forms at the junction, which disappears when the finger is passed through it, and this should be done at the end of the third week. In cases where the cicatrising area has been rather more than usual it may be necessary to use a conical vulcanite plug for two minutes for four or five nights, when any tendency to stricture will entirely disappear. But this must be done early—*i.e.*, at the end of the third week, whilst the fibrous tissue is still young and can be stretched. If left until the sixth week, or later, a definite hard ring will have formed, which will require somewhat prolonged and careful treatment with bougies : but this is a fault of the after-treatment, and not of the operation." The above does not prove to us that the "danger of stricture does not exist." Whether the fault of the after-treatment or of the operation, its occurrence would be the same misfortune to the patient. Another objection to Whitehead's operation, which the author does not seem to consider important, is the permanent exposure of a piece of mucous membrane which sometimes follows the operation, the continual weeping of this mucous membrane is a constant source of annoyance to the patient. The author refers to this condition as follows :—" Primary union in most cases does not occur . . . When primary union occurs, it is not always recognised, and the sight of the mucous membrane in an unusual situation leads to curious mistakes, as instanced in the following case." The curious mistake alluded to was the diagnosis of an ulcer being made by several medical men instead of *normal* mucous membrane—the patient evidently required a considerable amount of persuasion to assure him that his trouble was only *normal* mucous membrane.

Writing about the causes of hæmorrhoids we note the following on page 48 :—" The upright position of man and the absence of valves in the *superior mesenteric* vein are also predisposing causes of a mechanical character which must not be forgotten." That is a statement likely to be remembered by those who have not forgotten their anatomy—for the presence or absence of valves in the superior mesenteric vein could not influence the blood returning from the rectum.

With regard to the treatment of fissure, the author tells us " the only certain cure for a typical fissure is incision. A straight cut is made through the base of the ulcer, and is continued until the outer part of the sphincter is divided completely, and the skin incision should be continued for nearly an inch beyond this." We do not agree with the author in this, for the large majority of these cases, if not all, can be completely cured by less severe measures without dividing the sphincter muscle.

The book is well and fully illustrated, and, no doubt, will be appreciated by those who are "gradually accepting" the views of the author.

The Practical Medicine Series. Under the general editorial care of GUSTAVUS P. HEAD, M.D.; Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Series 1906. Vol. IV. Gynæcology, edited by EMILIUS C. DUDLEY, M.D., Professor of Gynæcology, North-West University Medical School, and C. VON BACHELLE, M.D., Gynæcologist to the German Hospital, Chicago. Vol. V. Obstetrics, edited by JOSEPH DE LEE, M.D., Professor of Obstetrics, North-West University Medical School; with the collaboration of D. ROEHLER, M.D., and HERBERT M. STOWE, M.D. Series of 1906. Chicago: The Year-Book Publishers.

THESE two small volumes form quite the most interesting year-books of obstetrics and gynæcology which we have yet come across in the English language. Their general plan is identical, and is an attempt to put in the form of a systematic handbook a *résumé* of the most important contributions which have been made during the past year to the literature of obstetrics and gynæcology. The result is good, and the two books furnish a valuable addition to the library of the specialist. We venture to suggest that it would add to the value of Volume V. if there was less "Editor." On almost every second page editorial notes appear in brackets detailing how many cases of the complication or method to which the preceding article refers the "Editor" has met with in his practice, or else adding some trite or dogmatic remark that in most cases is uncalled for. We do not know that we quite care for Dr. de Lee in the *rôle* of Bowdler, and are rather inclined to think his book would be of more value if it gave its extracts from current literature without criticism, and if the reader was allowed to make up his own mind on the value of these extracts. With this exception, however, the book is worthy of all praise.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Vol. X. Skin and Venereal Diseases, Nervous and Mental Diseases. Edited by W. L. BAUM, M.D.; HUGH T. PATRICK, M.D.; WILLIAM HEALY, A.B., M.D. Series of 1906. Chicago: The Year-Book Publishers.

THIS (being the tenth) is the concluding volume of the present series, which has been issued with the most praiseworthy promptitude. The high standard of production to which we have—very gladly—called the attention of our readers in the case of those other members of the series which have come under our notice is also a conspicuous feature of the present one. The type, paper, binding, and quality of pictorial illustration leave nothing to be desired; and the extremely—and most unusually—convenient size, which a wise philanthropy has evidently suggested, is one for which every reader should feel specially grateful.

Of course, the dictionary-like mobility of the subjects and points of view collected for the edification of those who may avail themselves of the concentrated wisdom herein collected make it quite out of the question to offer more than a general opinion regarding the matter and the manner of such a volume as that before us, we can none the less confidently give our readers the full assurance of our appreciation of the contents as a whole, and in its individual details. The rapidly progressive movement of research and acquisition in the two great divisions of the physical ills of the human economy which are here dealt with make it specially necessary that the busy practitioner should have such a volume as the present always laid within elbow-reach on his consulting table.

The revelations are not always so exhilarating as the earnest scientist and philanthropic physician would wish to see them. Plate II. (facing page 69) shows "epithelioma recurring after apparent cure with X-Ray"—a negative consummation entirely opposed to the wishes of all interested. But the sum total of progress is, on the whole, fairly satisfactory. And the past year's advance is admirably depicted in this volume—with the others of its series—which, accordingly, we cordially recommend to the attention of all practitioners.

We may remind our readers that the British agents of the "Practical Medicine Series" are Messrs. G. Gillies & Company, 28 Gibson Street, Hillhead, Glasgow.

Pathogenic Micro-organisms, including Bacteria and Protozoa. A Practical Manual for Students, Physicians and Health Officers. By WILLIAM HALLOCK PARK, M.D., Director of the Research Laboratory of the Department of Health, City of New York; assisted by ANNA W. WILLIAMS, M.D. Second Edition. Enlarged and thoroughly Revised. With 165 Engravings and 4 full-page Plates. London: Henry Kimpton. 1906.

THIS book rejoices in a double title. On the back of the binding is the old one, with which we are familiar since the first edition appeared, "Bacteriology in Medicine and Surgery." On the title-page is the one given above. The disadvantage of the arrangement is that when ordering there is room for misunderstanding and mistake. This is an unusual fault, and it is practically the only one we have to find with Professor Park's work. In all other respects it deserves unstinting commendation. Indeed, we feel we can safely go farther and say that it is the best practical exposition with which we are acquainted in the English language, of the relation of micro-organisms to disease, and of the accessory questions, such as disinfection. Moreover, the style in which it is written differs markedly from that of most of the American medical books with which we in this country are, so to speak, inundated. Professor Park commands a store of clear, well-balanced, harmonious language, avoiding the ear-wounding repetitions of the same word and the barbaric uncouthness of diction by which so many of his fellow-countrymen shock and repel the British reader. What seems to us especially attractive is the wealth of original observation in the light of which the writer is enabled to discuss the more difficult problems. Take, for example, Chapter XVI. on the nature of the substances concerned in agglutination. Here we find a capital discussion of the value of sero-diagnostic methods of identifying bacteria, of the extent to which serums rendered artificially rich in agglutinins for one bacterial species act on related species [the so-called group-reaction], and of the value of absorption methods for differentiation between a mixed and a simple infection. The results of the author's own experiments with horses and rabbits which had been injected with dysentery and para-dysentery bacilli, with bouillon alone, and with varieties of the colon bacillus, are graphically conveyed, and *when carefully studied* prove highly instructive. The absence of correlation between agglutinative and bactericidal power is well shown in Fig. 73.

The following chapter, which deals with diphtheria, contains the most complete and satisfactory account with which we are acquainted of the bacillus, its relation to the pseudo- and non-virulent typical forms, and its persistence in the throat. It surprises us a little to learn that the Klebs-Löffler bacillus retains the Gram only *fairly well.* In our experience it does so very well indeed. We find later on a full and clearly written account of the work of preparing and standardising toxin and antitoxin, and—a point little adverted to in English works—the use of the latter for the purpose of eradicating diphtheria bacilli from convalescents and healthy persons. Ehrlich's views as to the dual nature of the toxic substance and the compound nature of toxin and toxoid are clearly stated.

In the following chapter we find a good account of the bacillus of tetanus, explaining clearly why the therapeutic effects of its antitoxin have been so much less pronounced than those of the corresponding substance in diphtheria. Then follows an exhaustive chapter on the bacilli of the colon group, including the various organisms intermediate between typhoid and typical *B. coli* that have been found associated with para-typhoid, dysentery and para-dysentery. Speaking from a large personal experience of work with this group we can say that nowhere have we come across so clear and so complete a presentment of our present knowledge on this intricate subject. The agglutination-tables, founded on the author's own work, are most instructive. Dr. Park's treatise abounds in details of practical value to the public health officer. We may instance his chapter on disinfection, which contains an epitome of the best modern theory and practice. Another very good chapter is that on the bacteriology of milk in relation to disease. From it we learn that, despite persistent attempts made during the last three years to connect illness in children with bacteria in milk, no such connection was made out. In the course of the investigation 239 varieties of bacteria were isolated from milk, of which the vast majority gain access to the milk after it has left the udder. Intraperitoneal injection of about 40 per cent. of the varieties tested [2 cc.—animal not mentioned!] caused death. Only one variety was found to yield a toxic filtrate. Forty-eight hour cultures of 139 of them were fed to young kittens by means of a glass tube, 5 to 10 cc. daily for 3 to 7 days. *Only one culture produced illness or death.* The account given in the following pages of the experiments made to determine the effect of sterilised *versus* raw milk on young children at various seasons of the year and after various lengths of keeping is most interesting, novel, and suggestive. The case for sterilising in hot weather seems clearly made out. "The general practice of heating milk, which has now become a custom among the tenement population of New York, is undoubtedly a large factor in the lessened infant mortality during the hot months." When will our "tenement population" in Dublin take the hint?

In conclusion, we may draw attention to a few omissions and misprints. On p. 199 we feel sure that the *spirochæte,* met with in Vincent's angina, should have been mentioned; also the name of the bacillus (fusiformis) by which it is often accompanied. On p. 198, line 12, "toxin" should be "antitoxin." On p. 475 we find "*bigemmium* instead of "*bigeminum,*" and "microgametocyte" on line 16 of the footnote, instead of "microgamete." On p. 173, line 14, is not 10 per cent. sodium citrate rather strong? On p. 158 we think, amongst the consequences of the injection of the dead bodies of bacteria, the production of opsonins should have been mentioned. These are very small points, however, and in no way detract from the real merit of the work, which is so great as to render it indispensable to the class for which it is intended. E. J. McW.

The Medical Epitome Series. Pathology, General and Special. A Manual for Students and Practitioners. By JOHN STENHOUSE, M.A., B.Sc. Edin., M.B. Tor.; and JOHN FERGUSON, M.A., M.D. Tor. Series edited by VICTOR COX PEDERSEN, A.M., M.D. Illustrated. London: Hodder & Stoughton. 1906.

THE attempt to compress the whole subject of pathology, general and special, into a volume of 285 pages is met by certain difficulties. According to the general editor, the intention of the series is "that the maximum amount of information . . . should be given for a minimum price." The present volume suffers from all the defects inherent in such a scheme. In the attempt to be comprehensive many pages degenerate into mere vocabularies of technical terms with explanations attached. In the attempt to be concise, clearness is sacrificed. To take one example, a little over half a page is all that is devoted to the explication of Ehrlich's side-chain theory. Moreover, almost every page states in dogmatic form propositions which are either unproven hypotheses or obsolete doctrines. Thus (p. 19), of monstrosity by excess, it is said that "it commonly arises by over-stimulation of the ovum"; and (p. 36) fatty degeneration is said to occur "in cells which are . . . supplied with . . . overheated blood." The distinction made between fatty infiltration and fatty degeneration, as to the source of the fat, is not generally held nowadays. Amyloid change is given as an example of infiltration (p. 33); on p. 39 it is described as a degeneration.

The sections on special pathology are somewhat more trustworthy than those on general pathology, but in them also misleading statements are of frequent occurrence. What is meant, one wonders, by "semi-malignant," as applied to tumours? In the discussion of tumours of the uterus it is stated that "those usually met with are *lipoma*, *fibroma*, *sarcoma*, *carcinoma*, *papilloma*, *condyloma* [!], *adenoma*, *deciduoma malignum*." It is perhaps natural that *myoma* is forgotten, and that in the discussion of carcinoma of the uterus no mention is made of the most common form—epithelioma of the cervix.

The illustrations, of which there are seventeen, are good, and are, for the most part, taken from standard works.

We do not know to what class of reader such a book as this is suitable. We hope no student will attempt to learn pathology from it. He would be misled by all sorts of erroneous statements, and he would inevitably conceive a disgust for the subject of study.

Inflammation: an Introduction to the Study of Pathology. Being the Reprint (Revised and Enlarged) of an Article in Professor Allbutt's 'System of Medicine.' By J. GEORGE ADAMI, M.A., M.D., F.R.S. London: Macmillan & Co. 1907. Pp. xvi + 240.

THE work of Professor Adami stands too high to need any commendation from us. We can only congratulate ourselves that he has thought fit to reprint in this concise volume the excellent account of inflammation contributed by him to Professor Allbutt's "System of Medicine." Professor Adami combines in himself to an unusual extent three great qualities for a writer on scientific subjects—originality of conception, extensive knowledge, and lucidity of expression. These merits have long since gained for him a foremost place among English-speaking pathological teachers and workers.

Times have changed since inflammation was regarded as a disease and since treatment was designed to combat it. The present volume sets forth more clearly than we have seen elsewhere the view of inflammation as a defensive process on the part of the organism, as a reaction to injury. The author is careful to reject Ribbert's view that inflammation must be made to include infection; such teaching is, he thinks, unwise and, as a matter of terminology, inconvenient. Inflammation, therefore, is "the *local* reaction to injury," whether this be accompanied by a general reaction or not. On the other hand, he is careful to exclude the view of inflammation as merely a vascular process. Inflammation may take place in non-vascular tissues, and even in vascular tissues the vessel changes may be of slight importance.

It is but a few years since it was held that the cells engaged in the inflammatory process were all, or almost all, blood-cells. In this point there is a great change of view. Professor Adami makes plain the part taken by various classes of body-cells—endothelium, epithelium, and connective tissue.

Not all Dr. Adami's opinions on matters of details will meet with universal agreement, but, at any rate, his conclusions are formed after due consideration of opposing views, and whether accepted or not they have to be treated with respect.

We regret that space does not permit us to follow the argument of this admirable work in some detail, but we must close by directing special attention to the philosophical exposition, in the last chapter, of what is meant in pathology as in physiology by "adaptation."

Everyone who does not already possess this article in Professor Allbutt's System should obtain the reprint. He will be repaid by the perusal of an essay, clear, lucid, philosophical, at once a model of literary style and of scientific method.

IMPACTED CERUMEN.

WHEN the cerumen is hard, dry and adherent, use a solution of sodium carbonate (10 grains) in 2 drachms each of glycerine and water. Introduce a few drops into the ear several times a day, and then in the course of a few days the wax will be softened, and can be removed by injections of warm water. Afterwards put a plug of cotten-wool in the meatus and leave it for twenty-four hours.—*The Hospital*, July 13, 1907.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

President—J. M. Redmond, M.D., P.R.C.P.I.
Sectional Secretary—F. C. Purser, M.D., F.R.C.P.I.

Friday, April 5, 1907.

The President in the Chair.

Unusual Nervous Symptoms.

Dr. Dempsey exhibited a case showing unusual nervous symptoms, which he regarded as the result of multiple spinal sclerosis. The case was discussed by **Dr. Craig.**

Aneurysm of the Thoracic Aorta.

Dr. Winter showed a man suffering from the above. The man suffered from loss of voice, owing to paralysis of his right vocal cord. There were no other physical signs, other than a limited area of dulness on percussion and some difficulty in deglutition. On examination with X-rays a definite pulsating tumour could be seen to the left of the sternum.

Pseudo-renal Colic.

Dr. Parsons read a paper on the above, which was an account of a case which had long defied diagnosis, but had ultimately been correctly diagnosticated as an aortic aneurysm. The specimen was exhibited.

Addison's Disease.

Dr. Dempsey read an account of a case of Addison's disease of unusually short duration.

Cerebro-spinal Fever occurring in a Child the Subject of Lymphatism.

Dr. George Peacocke read a paper on the above subject. The patient was a girl aged five years, whose illness ended fatally eleven hours after the onset of symptoms. The chief symptom was repeated attacks of convulsions. There was only slight retraction of the head. Kernig's sign was absent. There were several purpuric spots of irregular size present on the legs and arms. The *post-mortem* revealed the presence of lymphatism, enlarged and bulky thymus, enlarged mesenteric glands, hypertrophied Peyer's patches and solitary follicles, prominence of the Malpighian corpuscles on section of the spleen. Cerebro-spinal fluid removed by lumbar puncture, shown after death, was turbid, the turbidity being due to leucocytes. Weichselbaum's meningococcus was found.

Dr. Harvey explained the microscopic slides.

Dr. Kirkpatrick asked if a diagnosis of the condition of lymphatism had been made before death, and if there was any way by which it could be recognised. The condition had been found in a number of cases in which sudden death had occurred during the administration of anæsthetics for operations, and the diagnosis of lymphatism before death was a matter of practical importance.

Professor White thought it possible that the condition of lymphatism had a good deal to say to the question of infection. Most of the cases that died of cerebro-spinal meningitis had had trouble with adenoids, and a good deal of lymphoid tissue at the back of the nose, and it was possible that they became infected in that way. The organisms existed in some healthy people. At the back of the nose there were many kinds of diplococci, many difficult to distinguish from the organism in cerebro-spinal fever. The only case in which he saw a *post-mortem* in the present outbreak had the condition which Dr. Peacocke called lymphatism.

Dr. Peacocke, in reply, said the idea of lymphatism did not occur to him during the patient's life. The symptoms before death were, unfortunately, practically nil, and the only physical sign likely to be detected would be the presence of a very large thymus showing dulness.

SECTION OF OBSTETRICS.

President—R. D. Purefoy, M.D., F.R.C.S.
Sectional Secretary—H. Jellett, M.D., F.R.C.P.I.

Friday, April 12, 1907.

Sir A. V. Macan in the Chair.

A Vulsellum Forceps.

Dr. Ashe exhibited a vulsellum forceps, which he had had made in order to get over the tendency of the bullet forceps to slip out of the cervix, and the discomfort attending the holding of it for any considerable period. The chief features of the vulsellum forceps were that the points interlocked instead of meeting outside, while they were flatter on the under surface than the ordinary bullet forceps so as to offer a greater resistance and not pull through the tissues. The handles were so shaped that no matter how they were held they were a great deal more comfortable. There was no difference as to the cost of production.

Chart representing Three Years in the Life of an Eclamptic.

Dr. Spencer Sheill exhibited a chart showing diagrammatically the dates and occurrences during the last three years in connection with an eclamptic patient. He had brought the case before the Academy a year ago, and he thought the further history of the case would be of interest. About 1900 nephrectomy was done for tuberculous left kidney. In 1904 she married and became pregnant. The remaining kidney, having the extra strain of pregnancy put upon it, began to fail; and in March, 1905, when about six months pregnant, she went to him suffering from eclampsia. Induction of labour was satisfactorily done, but the child was lost. In August of the same year she became pregnant again. The usual treatment was adopted, and as far as the kidney was concerned it was fairly satisfactory. In December of the same year the kidney again showed signs of failure. In the following January, when about eight months pregnant, the symptoms became so marked that he determined to induce labour. He delivered her of a living child, and about three hours afterwards she had an eclamptic seizure. Although strictly spoken to about the dangers of a third pregnancy, she again became pregnant, and in November of that year the kidney showed symptoms of rapid failure. After consultation with two other doctors, it was determined, in December, 1906, when only three months pregnant, to save her life by emptying the uterus. It was emptied by him under anæsthesia, and in about three days the amount of urine became normal. In January of this year it was thought advisable to prevent any further pregnancy, and after consultation, and with the leave of the husband and the patient, her Fallopian tubes were resected. The chart raised certain points of interest, such as the postponement of marriage for at least three years after the removal of one kidney, and the question as to the induction of labour in order to save the life of the mother and the child. There was also the point as to the significance of the amount of urea in the urine. If he had gone by the amount of albumen he would never have done anything with the case: it never rose beyond 0.15 per cent., whereas the amount of urea excreted fell as low as 7½ grains per ounce in 14 ounces in twenty-four hours. There were also the points as to the advisableness of inducing abortion and of sterilisation.

THE CHAIRMAN asked if the urine was examined between the pregnancies, and whether she had a very small quantity of urea.

DR. SHEILL said the kidney was functioning absolutely normally between the pregnancies, and was quite capable of carrying on its work. The urine was examined at very frequent intervals in order to be quite sure on that point.

DR. HASTINGS TWEEDY said the result had absolutely justified Dr. Sheill's treatment, but he had never heard of a woman being deliberately sterilised when no symptoms were present, and when there was no suggestion that she would ever become pregnant again. He did not suggest that anything but the right thing was done, but it was a very bold procedure, and if he had to contemplate such an action he would be very glad to be able to refer to the record of a successful result in a case of a similar kind.

DR. JELLETT could not agree with Dr. Tweedy as to the particular boldness or rarity of removing the tubes for renal disease. It was on all fours with the very old treatment of osteomalacia. One could not wait until pregnancy in order to resect the tubes. He could not look on the patient as being a healthy woman. Her kidney might be acting at one time, but it was amply proved that it would not act under the adverse circumstance of pregnancy.

DR. KIRKPATRICK instanced a case of a girl of twenty who became pregnant last year and had eclampsia at the time. She died with all the symptoms of failure of the kidneys. At the *post-mortem* they found she had old and chronic tubercular disease of one kidney, which had completely destroyed its function; the other kidney was amyloid. She recovered from the eclampsia, but died some months afterwards from failure of the single kidney.

Dr. Horne said that, considering the age of the patient, twenty-eight, and her apparent fertility, he thought Dr. Sheill was perfectly justified in his action. If he had allowed her to become pregnant again he would probably have had to repeat the former operation with less favourable results. In his experience albumen was always found persisting in the urine six and eight months after delivery where eclampsia had occurred.

The Chairman agreed with Dr. Horne, and said that the chart showed very graphically the condition of the patient.

Dr. Sheill, replying to a question by Dr. Neill, said the patient was not on an absolute non-nitrogenous diet except when she was showing kidney insufficiency. Between pregnancies she was on a mixed diet, but she had been warned against taking the usual amount of meat.

The Method of Bier in Gynæcology.

Dr. Spencer Sheill read a paper on the above. He said the paper dealt with Bier's treatment of disease (by hyperæmia artificially produced) as applied *locally* in gynæcology, and some actual experiences with it in a variety of gynæcological ailments were related by the author. The tendency nowadays of imitating Nature's methods of combating disease was discussed. Dr. Sheill dismissed the "arterial" hyperæmia as produced by hot air and the "venous" form by "constriction," because he had had no experience of the former, and the latter he considered inapplicable to gynæcology. The "suction" form, creating mixed arterial and venous hyperæmia, was the kind he used, and he showed a simple form of apparatus which had been successfully used in a number of cases. The author said that in order to be beneficial the "suction" must be intermittent, and must not be so strong as to cause pain. Three minute application and one minute interval for half hour-sittings daily or weekly, as the case might be, were recommended. He also spoke of the value of the intermittent action, "massaging" the uterus being valuable in cases of adhesions and relaxed pelvic ligaments. Dr. Sheill had used the treatment in two cases of amenorrhœa without obvious cause, the results were negative in so far as the menses were concerned, although in one case other pelvic symptoms were relieved. A case of endometritis was very favourably influenced. In two cases of old pelvic exudate and adhesions the result was especially gratifying. The author suggested that in gonorrhœa the suction treatment would be valuable to prevent the upward spread of the infection. Also for the safe and easy removal of tenacious mucus from the cervix of nulliparas desirous of becoming pregnant. Klapp, an assistant to Bier, was quoted as recommending "suction" in cases of suppurative mastitis. Dr. Sheill described a case in his own experience—since writing the paper—the result was excellent. In conclusion the writer of the paper expressed a hope that others in this country would give the treatment a trial, and that those who have used it would compare results obtained, because he believed it to be a distinct advance in gynæcological methods.

The Report of the Rotunda Hospital.

DR. HASTINGS TWEEDY read the Report of the Rotunda Hospital for the year 1905-6. [It will be found at page 81.]

The discussion on the paper was postponed till the next meeting of the section.

A New Uterine Dilator.

DR. A. J. HORNE exhibited for DR. DUKE a new uterine dilator. Dr. Duke said that anyone who has performed the operation of dilatation must have noticed the contraction of the cervix uteri on the curette taking place during the proceeding. The cervical wall may also require scraping, and owing to the contraction spoken of this becomes a difficult matter, if not impossible. The canulæ shown were designed to be introduced after dilatation according to the amount of room required, the curetting being carried on through the canula, which is gradually withdrawn, thus effectually preventing the contraction of cervix on curette.

DR. TWEEDY expressed the Section's appreciation of Dr. Duke's kindness in giving them the opportunity of seeing his interesting appliance.

SECTION OF ANATOMY AND PHYSIOLOGY.

President—A. F. DIXON, M.B.

Sectional Secretary—E. P. M'LOUGHLIN, M.B.

Friday, April 26, 1907.

THE PRESIDENT in the Chair.

Specimens to Display the Anatomy of the Air Sinuses Communicating with the Nasal Cavities.

PROFESSOR SYMINGTON, in exhibiting the above, said they had been prepared according to a method recommended by Professor

Gustav Killian, of Freiburg. The method took advantage of the well-known property of formalin to harden the mucous membrane and periosteum, so that it possessed a considerable amount of elasticity, and retained to a very marked degree its typical form after the removal of the bony wall. In one of the specimens illustrating the sinuses as exposed from the lateral aspect, the membranous wall of the antrum, if pressed on by the finger, sank in, but resumed its normal position on the pressure being removed. With regard to the method of freezing, he had found it most convenient to place the head in a wooden box, made without nails, to fit the particular specimen. The box was then filled with liquid gum, placed on the freezing, mixture, and gradually immersed until it became firm. When thoroughly frozen both box and specimen were divided. There was no chance of the head moving, and in that way better sections could be got. The illustrations which he had made from the specimens showed what he believed to be the usual arrangement of the air-cells of the nose: his own observations had confirmed those of Killian with reference to the typical arrangement of the nasal air cells. The principal point on which Killian differed from other observers was with reference to the definition of the frontal air-cells, which he numbered one, two, three and four, and distinguished from the ethmoidal cells. One of the specimens now exhibited showed four frontal cells. According to Killian, any one of them might develop into a frontal sinus. He had not been able to satisfy himself on that point: as a rule, it was the second or third cell that did so.

A Dissected Head, with Numerous Photographs and Drawings.

Professor Symington next exhibited a case of the above to illustrate a method he had devised to determine the relations of the superficial and deep parts of the brain to the scalp and skull. The advantages claimed for the method were that all the parts of the head were preserved, and could be readily separated and replaced in their natural position; while, from the photographs, figures could be constructed, showing orthogonal projections of the various parts of the brain on to the lateral, anterior, posterior, or superior aspect of the skull and scalp.

The President tendered the thanks of the Section to Professor Symington.

Professor Fraser, in expressing his appreciation of the communication, recalled having exhibited somewhat similar work many years ago before the Academy.

Professor Pye also expressed his appreciation.

Dr. P. Dempsey said the specimens were of intense interest to him, apart from the question of method, as they had an important bearing on the surgical treatment of affections of the nose. The preparation of the frontal sinus was interesting to anyone who had to try to heal a discharge of pus from it. It had been found that the treatment of the frontal cavity was practically of no use unless access was had to the anterior ethmoidal regions. He was curious to know if Professor Symington had often found the frontal sinus absent; he had found both absent in one subject.

Professor Symington, in replying, said he had not met a case of absence of the frontal sinuses.

Lateral Fixation of the Cervix Uteri.

Dr. Ella Ovenden gave a communication on this subject. In 1895 Mackenrodt described a ligament of the uterus (ligamentum transversalis colli) to which he attached great importance, but which is not described in anatomy text-books. On investigation this is found to be a band of connective tissue and unstriped muscle fibre running between the layers of the broad ligament below the uterine artery. It is attached centrally to the vault and lateral fornix of the vagina, and to a part of the supravaginal portion of the cervix, while distally it joins the connective tissue running with the uterine artery and the connective tissue coming through the sacro-sciatic foramen, and, in addition, is attached to the third and fourth pieces of the sacrum.

Professor Symington said that if a section was made about an inch and a half to one side of the median plane, a firm mass of tissue was seen between the layers of the broad ligament on the side of the cervix. He took it that the "ligament" was really the fibrous tissue in which the uterine artery was embedded. He had never endeavoured to follow the tissue to see if he could make out a definite ligament, but there was, undoubtedly, a very firm tissue at the side of the cervix consisting mainly of a collection of small arteries and veins, the veins being very much more numerous than the arteries. He was loth to add another ligament to the list, and was disposed to think it was the connective tissue in which the veins and uterine artery were embedded.

Dr. Ovenden, in reply, said the pull on the ligament seemed to go along the direction of the blood-vessels, but she thought there was a distinct insertion also into the sacrum. The ligament did not consist of connective tissue only; there were certainly unstriped muscle fibres in it as well as a great many small veins.

Models illustrating the Movements of the Wrist Bones.

Dr. H. M. Johnston, in exhibiting these models, said the hand of a subject was placed in the desired position, formalin was injected into the brachial artery, and the hand was allowed to remain about a week until thoroughly hardened. The bones were perfectly cleaned on one aspect, the hand maintaining its position. Plaster of Paris was poured on the dissected aspect, and a mould taken. The mould was not removed; the hand was turned and another aspect dissected and moulded, both aspects, anterior and posterior, being now enclosed in two plaster moulds. The moulds were then taken away, and the bones, easily separated from them, could be fitted into either mould to illustrate the aspect desired. A gelatine mould was made of the whole model, and from it a plaster cast was produced. The advantage of the plaster model was that the plaster "bones" did not fall out, and the model was practically indestructible. Ten hands were used for the models, which showed points to which attention had not been drawn. In both radial and dorsal flexion the pyramidal bone articulated with the head of the os magnum, but not when palmar flexion took place.

Fœtus cleared by the Schultze Method.

The President exhibited a specimen which showed the condition of the skeleton in the fourth month.

Double Ureters.

Professor Fraser exhibited an aged female subject with double ureters on the right and left sides of the body. These were separate along their entire lengths, and at the bladder end the two orifices on each side opened independently about 1 cm. apart. The right and left kidneys were of the normal size. On dissection, however, they were found to be apparently double. Each had two arteries from the aorta (the left had, in addition, a third from the aorta, entering the kidney at its caudal extremity; from this extremity a large vein ran to the left common iliac). Of the two ureters on either side each entered a separate hilum, each had a separate pelvis, which subdivided the lower into three and the upper into two major calyces. Each hilum was separated by a complete transverse bridge of cortical and medullary substance. The two right ureters lay behind the kidney, that is, in the ordinary relation. The upper ureter of the left kidney lay also behind, but the lower passed out in front, thus having the same relation to the kidney structure as in every case of the horse-shoe form of which he had had experience.

Sacral Nerves.

PROFESSOR FRASER also gave a brief summary of the condition in which he found the posterior primary divisions of the first four sacral nerves, illustrating his remarks on the board. In addition to the loops between each of these nerves, usually described on the posterior surface of the sacrum, the first nerve rarely gave a large branch to the skin—it came out when present close to the posterior superior iliac spine. The second nerve passed externally always between the long and short posterior sacro-iliac ligaments, and was joined at the usual segmental intervals by the third and fourth nerves. These three formed a large nerve, which was buried in the ligamentum sacro-tuberosum (great sacro-sciatic). After traversing this ligament, external to the costal and transverse elements of the sacrum, the nerve broke up into the two or three branches usually described as passing through the gluteus maximus near its coccygeal origin to the skin.

DR. H. M. JOHNSTON said the first sacral nerve had been seen coming down to the level of the great trochanter, eight inches long. He had traced three ends, given off exteriorly, back from their position in the skin to the large cord.

PROFESSOR SYMINGTON said the question of the ureters was of practical importance in connection with the diagnosis of the condition of the kidney during life. During the winter he had seen a body in which there was a typical horse-shoe kidney and two ureters opening in a perfectly normal manner into the bladder, so that a cystoscopic examination could not disclose anything abnormal in the arrangement of the kidneys.

PROFESSOR FRASER replied.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by Sir John Moore.

Vital Statistics

For four weeks ending Saturday, July 13, 1907.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending July 13, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 17.1 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, July 13, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality:—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c	Week ending				Average Rate for 4 weeks
	June 22	June 29	July 6	July 13			June 22	June 29	July 6	July 13	
22 Town Districts	17.7	17.8	18.2	17.1	17.7	Lisburn -	18.2	9.1	4.5	9.1	10.2
Armagh -	6.9	13.7	6.9	13.7	10.3	Londonderry	8.6	11.0	13.5	17.2	12.6
Ballymena	14.4	23.9	9.6	23.9	17.9	Lurgan -	—	4.4	26.6	17.7	12.2
Belfast -	18.5	19.0	20.3	14.6	18.1	Newry -	—	8.4	21.0	8.4	9.5
Clonmel -	15.4	10.3	25.6	41.0	23.1	Newtownards	17.2	28.6	28.6	17.2	22.9
Cork -	13.7	17.1	18.5	16.4	16.4	Portadown	15.5	20.7	36.2	10.3	20.7
Drogheda -	16.3	4.1	8.2	24.5	13.3	Queenstown	13.2	19.8	33.0	6.6	18.1
Dublin (Reg. Area) -	20.8	19.5	18.3	21.0	19.9	Sligo -	33.6	4.8	9.6	—	12.0
Dundalk -	16.0	8.0	12.0	12.0	12.0	Tralee -	21.1	15.9	10.6	—	11.9
Galway -	31.1	31.1	19.4	15.5	24.3	Waterford	13.6	13.6	9.7	15.6	13.1
Kilkenny -	9.8	19.7	9.8	24.6	16.0	Wexford -	9.3	4.7	23.3	4.7	10.5
Limerick -	10.9	17.8	10.9	15.0	13.7						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, July 13, 1907, were equal to an annual rate of 1.0 per 1,000—the rates varying from 0.0 in seventeen of the districts to 4.4 in Lurgan. Among the 104 deaths from all causes registered in Belfast are 4 from measles, 8 from cerebro-spinal fever, and 2 returned as from *cerebro-spinal meningitis*. The 8 deaths from all causes in Waterford include one from measles.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, July 13, 1907, amounted to 193—87 boys and 106 girls; and the deaths to 161—75 males and 86 females.

DEATHS.

The registered deaths represent an annual rate of mortality of 21.5 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the Area, the rate was 21.0 per 1,000. During the twenty-eight weeks ending with Saturday, July 13, the death-rate averaged 27.0, and was 0.7 above the mean rate for the corresponding portions of the ten years, 1897–1906.

Included in the deaths (161) there were 2 from measles, 7 from whooping-cough, and 5 from diarrhœal diseases. In each of the 3 preceding weeks the deaths from measles were 9, one, and 6; the deaths from whooping-cough were 5, 8, and 9; and the deaths from diarrhœal diseases were 3, 2, and 0. There was one death from influenza, which, in each of the 3 preceding weeks, caused 0, 2 deaths, and one death. There was also one death from cerebro-spinal fever, which caused 2, 2 and 0 deaths, respectively, in the 3 preceding weeks.

There were 8 deaths from broncho-pneumonia, and 6 deaths from *pneumonia* (not defined).

The total deaths from all forms of tuberculous disease, 26 in number, included 9 deaths from tubercular phthisis, 9 deaths returned as from *phthisis*, 2 deaths from tubercular meningitis, and 6 deaths from other forms of the disease. In each of the 3 preceding weeks, deaths from all forms of tuberculous disease were 43, 36, and 29.

Carcinoma caused 6 deaths, and 4 deaths were attributed to cancer (undefined).

The deaths of 5 infants prematurely born were registered.

Of 14 deaths from diseases of the brain and nervous system, 4 were from meningitis, and 8—all of infants under one year of age—were from *convulsions.*

Twenty-nine deaths were attributed to diseases of the heart and blood vessels, and bronchitis caused 14 deaths.

Of 3 deaths from accidental causes, one was by drowning.

In 8 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 4 children under one year of age and the deaths of 2 persons aged 60 years and upwards.

Forty-nine of the persons whose deaths were registered during the week were under 5 years of age (30 being infants under one year, of whom 11 were under one month old), and 42 were aged 60 years and upwards, including 14 persons aged 70 and upwards, of whom 6 were octogenarians, and one (a female) was stated to have been aged 94 years.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. Byrne Power, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended July 13, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	June 22	-	*	*	8	3	-	8	-	3	7	8	-	*	*	1	33
	June 29	-	*	*	8	1	-	6	-	1	9	13	-	*	*	*	38
	July 6	-	*	*	5	-	-	7	-	2	4	15	-	*	*	*	33
	July 13	-	*	*	8	1	-	7	-	4	8	12	-	*	*	1	41
Rathmines and Rathgar Urban District	June 22	-	*	*	1	-	-	-	-	-	-	1	-	*	*	*	2
	June 29	-	*	*	-	-	-	-	-	-	-	-	-	*	*	1	1
	July 6	-	*	*	1	-	-	-	-	-	-	-	-	*	*	*	1
	July 13	-	*	*	1	-	-	-	-	-	-	-	-	*	*	*	1
Pembroke Urban District	June 22	-	47	-	-	-	-	-	-	-	1	-	-	*	8	*	56
	June 29	-	23	-	-	-	-	-	-	-	-	2	-	*	15	*	40
	July 6	-	18	-	-	-	-	-	-	1	-	-	-	*	5	*	24
	July 13	-	21	-	1	-	-	1	-	1	-	-	-	*	9	*	33
Blackrock Urban District	June 22	-	*	*	-	-	-	-	-	-	-	1	-	*	*	*	1
	June 29	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	July 6	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	July 13	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
Kingstown Urban District	June 22	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	June 29	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	July 6	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	July 18	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
City of Belfast	June 22	-	*	*	9	-	-	3	1	11	8	6	1	*	*	16	55
	June 29	-	*	*	9	-	-	1	-	2	1	10	-	*	*	11	34
	July 6	-	*	*	8	-	-	3	-	2	6	3	-	*	*	6	28
	July 18	-	*	*	6	-	-	4	-	1	5	3	2	*	*	8	29

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended Saturday, July 13, 1907, 8 cases of measles were admitted into hospital, 16 were discharged, there were 2 deaths, and 50 cases remained under treatment at its close. At the close of each of the three preceding weeks the cases of measles under treatment numbered 65, 62, and 60.

Nine cases of scarlet fever were admitted to hospital, 3 were discharged, and 51 cases remained under treatment at the close of the week. This number is exclusive of 12 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was admitted to hospital during the week, and 4 cases remained under treatment at its close.

Nine cases of diphtheria were admitted, 4 were discharged, and 19 patients remained under treatment at the close of the week.

Four cases of enteric fever were admitted, 5 were discharged, and 24 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 12 cases of pneumonia were admitted to hospital, 10 were discharged, there were 2 deaths, and 33 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, July 13, 1907, in 76 large English towns, including London (in which the rate was 12.2), was equal to an average annual death-rate of 12.3 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 13.7 per 1,000, the rate for Glasgow being 14.2 and that for Edinburgh 13.7.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General for Ireland has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ending July 13. From this Report it appears that of a total of 55 cases notified 17 were of scarlet fever, 15 of diphtheria, 5 of erysipelas, and one of enteric fever. Among the 398 cases of infectious diseases in hospital at the close of the week were 114 cases of scarlet fever, 79 of diphtheria, one of membranous croup, 66 of measles, 18 of whooping-cough, 13 of enteric fever, and 10 of erysipelas.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of June,* 1907.

Mean Height of Barometer,	29.761 inches.
Maximal Height of Barometer (16th, at 9 p.m.),	30.232 ,,
Minimal Height of Barometer (10th, at 9 a.m.),	29.399 ,,
Mean Dry-bulb Temperature,	54.4°.
Mean Wet-bulb Temperature,	51.1°.
Mean Dew-point Temperature,	47.9°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.335 inch.
Mean Humidity,	79.1 per cent.
Highest Temperature in Shade (on 14th),	65.2°.
Lowest Temperature in Shade (on 25th),	43.0°.
Lowest Temperature on Grass (Radiation) (25th),	40.2°.
Mean Amount of Cloud,	67.7 per cent.
Rainfall (on 27 days),	2.837 inches.
Greatest Daily Rainfall (on 4th),	.498 inch.
General Directions of Wind,	W., S.W., N.W.

Remarks.

It seemed hardly possible that a more inclement June than that of 1879—the "cold year"—could occur. And yet June, 1907, establishes a record for low temperature, wind and rain-frequency in Dublin. There were only 3 days on which rain was not measured in appreciable amount. The wind blew strongly on as many as 17 days, chiefly from westerly points of the compass, and the mean temperature was only 55.4° compared with 55.9° in June, 1879. The rainfall was not as heavy as in that phenomenally cold June, when 4.046 inches were recorded on 24 days; but it was more frequent, for the rain-days numbered 27 out of 30. At 9 a.m. three-fourths of the sky were on the average covered with clouds, and throughout the month there was an unusual tendency to a formation of cirrus cloud at a great height.

In Dublin the arithmetical mean temperature (55.4°) was below the average (58.0°) by 2.6°, the mean dry-bulb readings at 9 a.m. and 9 p.m. were 54.4°. In the forty-three years ending with 1907, June was coldest in 1882 (M. T. = 55.8°) and 1879 ("the cold year") (M. T. = 55.9°). It was warmest in 1887 (M. T. = 62.3°); in 1896 (M. T. = 61.4°); and in 1899 (M. T. =

61.3°). In 1906 the M. T. was 59.6°. June, 1907, thus establishes a record for coldness.

The mean height of the barometer was 29.761 inches, or 0.156 inch below the corrected average value for June—namely, 29.917 inches. The mercury rose to 30.232 inches at 9 p.m. of the 16th, having fallen to 29.399 inches at 9 a.m. of the 10th. The observed range of atmospheric pressure was, therefore, 0.833 inch.

The mean temperature deducted from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 54.4°, or 3.6° above the corresponding M. T. for May, 1907. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.* × .465), the value was 54.9°, or 2.6° below the average mean temperature for June, calculated in the same way, in the thirty years, 1871–1900, inclusive (57.5°). The arithmetical mean of the maximal and minimal readings was 55.4°, compared with a thirty years' average of 58.0°. On the 14th the thermometer in the screen rose to 65.2°—wind, S.W.; on the 25th the temperature fell to 43.0°—wind, W.S.W. The minimum on the grass was 40.2° also on the 25th.

The rainfall amounted to 2.837 inches on 27 days. The average rainfall for June in the thirty-five years, 1866–1900, inclusive, was 1.920 inches, and the average number of rainy days was 15. The rainfall, therefore, and also the rainy days were considerably above the average. In 1878 the rainfall in June was very large—5.058 inches on 19 days; in 1879, also, 4.046 inches fell on 24 days. On the other hand, in 1889, only .100 inch was measured on 6 days. In 1887 the rainfall was only .252 inch, distributed over 5 days. In 1906, 1.049 inches fell on 12 days.

High winds were noted on as many as 17 days, and reached the force of a gale on the 3rd, 20th and 24th. A solar halo was seen on the 30th. Temperature never exceeded 65.2° in the screen. Thunder and lightning occurred on the 10th and 24th. Hail fell on the 10th, 24th and 28th—in a severe hailstorm on the 24th.

The rainfall in Dublin during the six months ending June 30th amounted to 12.336 inches on 108 days, compared with 12.641 inches on 109 days in 1906, 10.201 inches on 92 days in 1905, 12.817 inches on 102 days in 1904, 15.054 inches on 108 days in 1903, 12.344 inches on 98 days in 1902, 9.352 inches on 80 days in 1901, only 6.741 inches on 67 days in 1887, and a thirty-five years' average of 12.060 inches on 95 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. William J. Good, returns the mean height of the barometer as 29.767 inches, the highest reading observed being 30.235 inches at 9 p.m. of the 16th, the lowest, 29.403 inches at 9 a.m. of the 10th. The arithmetical mean temperature was 54.4°, the mean dry-bulb reading at 9 a.m. and 9 p.m. being 54.6°. The thermometer rose to 65.7° in the shade on the 14th, and fell to 40.0° on the 17th. The grass minimum was 34.9° on the 7th. Rain fell on 23 days to the amount of 2.732 inches, .501 inch being measured on the 4th. The number of hours of bright sunshine registered by the Campbell-Stokes sunshine recorder was 129.4, giving a daily average of 4.3 hours. The corresponding figures for 1905 were 217.6 hours and 7.3 hours, and for 1906, 210.3 hours and 7.0 hours. The mean earth temperature read at 9 a.m. was 55.6° at a depth of 1 foot below the surface of the ground, 52.9° at a depth of 4 feet.

Mr. R. Cathcart Dobbs, J.P., reports that at Knockdolian, Greystones, Co. Wicklow, the rainfall was 3.470 inches on 23 days, compared with .870 inch on 7 days in 1906, 1.500 inches on 10 days in 1905, 2.280 inches on 10 days in 1904, 1.785 inches on 11 days in 1903, and 3.341 inches on 16 days in 1902. The heaviest rainfall in 24 hours was .400 inch on the 11th and 22nd. The total fall since January 1 has been 14.090 inches on 92 days, compared with 12.535 inches on 73 days in 1906, 11.111 inches on 77 days in 1905, 14.307 inches on 94 days in 1904, 17.440 inches on 90 days in 1903, 15.091 inches on 84 days in 1902, 13.670 inches on 75 days in 1901, and only 7.356 inches on 61 days in 1896.

At Clonsilla, Greystones, Co. Wicklow, Dr. Arthur G. Price measured 3.390 inches of rain on 25 days; .58 inch being recorded on the 4th and 5th taken together. The mean temperature was 55°, the extremes being—highest, 71°, on the 10th; lowest, 41°, on the 24th.

Dr. Francis P. Leyland reports that at the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, rain fell on 27 days to the amount of 3.703 inches, the maximal fall in 24 hours being .485 inch on the 8th. The mean temperature for the month was 53.8°, the extremes being—highest, 67.5° on the 7th; lowest, 43.0° on the 22nd and 25th. The June rainfalls in recent years at this station were—1903, 2.004 inches on 12 days; 1904, 2.494 inches on 12 days; 1905, 2.051 inches on 13 days; 1906, .831 inch on 13 days.

Dr. Arthur S. Goff returns the rainfall at Lynton, Dundrum, Co. Dublin, at 2.67 inches on 27 days, compared with 1.26 inches on 15 days in 1906, 1.51 inches on 12 days in 1905, 1.22 inches on 14 days in 1904, 1.54 inches on 12 days in 1903, 3.08 inches on 19 days in 1902, and 1.71 inches on 13 days in 1901. The greatest daily fall was .39 inch on the 10th. The mean shade temperature was 56.4°. The thermometric range was from 67° on the 4th and 16th to 46° on the 3rd and 16th.

The rainfall recorded at Cloneevin, Killiney, Co. Dublin, by Mr. R. O'B. Furlong, C.B., was 2.45 inches on 23 days, compared with .87 inch on 11 days in 1906 and 1.56 inches on 11 days in 1905. The maximal fall in 24 hours was .54 inch on the 4th. The average rainfall in June in the 22 years (1885–1906) was 1.753 inches on 13.0 days. The total fall at Cloneevin since January 1, 1907, amounts to 11.67 inches on 96 days, compared with 12.56 inches on 89 days in the first six months of 1905, and 11.95 inches on 104 days in 1906.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, was 2.872 inches on 23 days, compared with 1.77 inches on 12 days in 1906. The heaviest fall in 24 hours was .505 inch on the 4th. The mean shade temperature was 54.2°, the extremes being—highest, 69.5° on the 15th; lowest, 38.0° on the 24th. The M. T. was 58.4° in 1905, and 57.4° in 1906.

Dr. C. Joynt returns the rainfall at 21 Leeson Park, Dublin, at 2.682 inches on 24 days, .440 inch having been recorded on the 4th.

At White Cross, Stillorgan, Co. Dublin, Miss Muriel O'Sullivan registered a rainfall of 2.416 inches on 28 days—the largest measurement in 24 hours being .360 inch on the 4th.

The Rev. Arthur Wilson, M.A., reports a rainfall of 5.90 inches on 25 days at the Rectory, Dunmanway, Co. Cork. The month was very wet and cold. On the 11th .77 inch was measured; on the 4th .72 inch, and on the 24th .50 inch. The rainfall for the first six months of 1907 at Dunmanway was 25.27 inches. At 5 p.m. of the 30th thunder and lightning occurred and a hailstorm "with hailstones as large as small marbles."

Mr. W. Miller returns the rainfall at Cork as 3.53 inches on 25 days—this amount exceeding the average for June by .77 inch. The greatest rainfall in 24 hours was .81 inch on the 11th. The rainfall of the first six months of 1907 in Cork was 14.16 inches, or 3.82 inches below the average.

At the Ordnance Survey Office, Phœnix Park, Dublin, rain fell in June on 26 days to the total amount of 3.049 inches, .590 inch being registered on the 7th. The duration of bright sunshine was 116.3 hours, the most in one day being 10.6 hours on the 29th.

PERISCOPE.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following gentlemen, having passed the requisite examinations, were at a meeting of the College held on May 16th, 1907, admitted ordinary Fellows:—Arthur Geoffrey Bate, M.B., Ch.B., Brighton; John Henry Montgomerie Bell, M.B., Ch.B., Edinburgh; Thomas Watts Eden, M.D., F.R.C.P.Lond., London, W.; William Hume, M.B., Ch.B., Edinburgh; Bertram Ingram, L.R.C.S.E., Edinburgh; Ernest Courtney Lomas, D.S.O., M.B., M.R.C.S., Eng., Fleet Surgeon, Royal Navy; Francis William Lundie, M.B., Ch.B., Edinburgh; Elystan Clodrydd Evelyn O'Leary, M.R.C.S. Eng., L.R.C.P., London, Staff Surgeon, Royal Navy; William Henry Parkes, M.B., Ch.M., Auckland, N.Z.; Andrew Maclean Pollock, M.B., Ch.B., Glasgow; Charles Henry Thomas, M.D., L.R.C.S.E., Toronto; Richard Snelling Roper, M.R.C.S., Eng., L.R.C.P.Lond., London, W.; Charles Richard Whittaker, L.R.C.S.E., Edinburgh, and John Clark Wilson, M.D., D.P.H., London, N.W. The medal and set of books presented to the College by Colonel William Lorimer Bathgate, in memory of his late father, William McPhune Bathgate, F.R.C.S.E., Lecturer on Materia Medica in the Extra Academical School, was awarded after the usual Winter Session competitive written examination in Materia Medica, &c., to Miss Alice E. M. Babington, B.A., Greenfort, Fahan, Co. Donegal.

IRISH MADE CUTLERY.

On Wednesday, July 3, 1907, the Dublin Cutlery Manufacturing Co., of Liffey Works, Capel Street, Dublin, declared their works open, giving demonstration in table knife making to the Press and members of the ironmongery and jewellery trades. Visitors were shown how the rough bar of steel was forged by hand and welded into shape and hardened, tempered and made ready for grinding. The process of hardening and tempering is probably the most important of all in the manufacture of cutlery. Fortunately the water in Dublin has the same properties as the water in Sheffield, where most of the best cutlery in the world is made, so the problem of hardening in water is overcome. After hardening the blades visitors were shown the various stages of grinding and polishing. Then the knives were taken to the cutler's shop where handles are fitted, and the final touches were put to the knives. The cutlery made is only of the very best quality, being hand forged from the best quality of steel. We understand that the prices and quality will compare favourably with those of the best makers in Sheffield.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Esençia de Calisaya.

It is probable that the combined action of all the active principles of genuine cinchona bark is productive of more beneficial results than those which are obtainable from the administration of quinine alone. A distinctive feature of cinchona calisaya is that it is richer in quinine than in other alkaloids, and for this reason it is particularly suitable for prescription. Each fluid ounce of Esençia de Calisaya represents 24 grains of the highest grade of yellow Peruvian bark skilfully blended with special flavouring and stimulating agents which render the drug acceptable to the most fastidious palates and greatly enhance its tonic value. The dose is from 1 to 4 fl. drachms. It is supplied by Messrs. Parke, Davis & Co., London and New York, in bottles of 8 and 14 fluid ounces.

Adrenalin and Eucaïn Tablets.

Messrs. Parke, Davis & Co., of London, New York, and Detroit, Michigan, have prepared these tablets. Each tablet contains $\frac{1}{2000}$ grain of adrenalin and $\frac{1}{6}$ grain of eucaïn lactate, with a proportion of sodium chloride sufficient to impart saltness to the solution. One tablet dissolved in 17 minims of sterile distilled water forms an analgesic and ischæmic agent for use in dental extractions and small operations, which will contain one per cent. of the eucaïn salt and about one of adrenalin in 30,000 parts. One tablet dissolved in 85 minims of sterile distilled water forms a solution similar in strength to that used in operations at University College Hospital, as reported in *The Lancet*, July 25, 1903, and *The British Medical Journal*, December 24, 1904. The tablets are supplied in tubes of 25.

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SEPTEMBER 2, 1907.

PART I.
ORIGINAL COMMUNICATIONS.

◆

ART. VI.—*On the Opsonic Index and the Therapeutic Inoculation of Bacterial Vaccines.*[a] By ARTHUR H. WHITE, Professor of Pathology, Royal College of Surgeons in Ireland; Pathologist to the Meath Hospital and to Cork Street Fever Hospital, Dublin.

FEW pieces of recent laboratory work appear to be so pregnant with practical utility, and certainly no piece of recent work has been so stimulating, as that of Wright and Douglas on opsonins and bacterial inoculations.

Theoretically, the possibilities of the therapeutic inoculation of vaccines in bacterial diseases are limitless; and, if only one-hundredth part of these are ever realised, the treatment of such diseases will have undergone a revolution, and Medicine will have added to its armoury new weapons of great and real power.

The object of the following paper is to set forth, as impartially as possible, the general results of the writer's own work, and to state the conclusions at which he has arrived in regard to the statements and claims put forward by the originators of the method of treating certain infectious diseases by the inoculation of vaccines in doses and at intervals determined by the estimation of the opsonic contents of the blood.

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[a] Read before the Section of Pathology in the Royal Academy of Medicine in Ireland, on Friday, May 3, 1907.

The statements and claims referred to are briefly as follows:—

1. That in normal blood there are present in fixed amounts substances of a protective nature called *opsonins*, whose function it is to prepare bacteria for ingestion by the leucocytes.

2. That these *opsonins* are specific in their nature.

3. That a person who is the subject of a local infection has less of the specific *opsonin* in his blood, or, in other words, has a lower " opsonic index " to the micro-organism causing the infection than a normal individual.

4. That in such a case the amount of this protective substance may be increased (*i.e.*, the " opsonic index " may be raised) by the inoculation of a vaccine prepared from dead cultures of the micro-organism concerned.

5. Finally, that by the inoculation of suitable and properly interspaced doses of the vaccine the opsonic index is raised and maintained at a high level, and in consequence of the blood being thus rendered rich in protective substances[a] improvement and, finally, cure result.

It is quite clear that such claims cannot be lightly passed over, but should be investigated in the fullest possible way. On the one hand we must consider them without being carried away by undue enthusiasm in their favour, and on the other hand we must not allow ourselves to be blinded by any prejudice in favour of the older methods, which though certainly less laborious are possibly less reliable.

The method of determining the opsonic index is by incubating for fifteen minutes, at 37° C., a mixture made in a capillary pipette of equal parts of (1) " washed corpuscles " (*i.e.*, corpuscles freed from all traces of plasma), (2) an emulsion of the micro-organism, and (3) serum from the patient whose blood is being tested. The number of organisms engulfed by, say, fifty polynuclear leucocytes are then counted and compared with unity, which is the number found in fifty polynuclear leucocytes in a similarly prepared film made from a mixture of equal parts of (1) the same "washed corpuscles," (2) the same emulsion of bacteria, and (3) the serum of a normal individual. Estimations of the opsonic contents of serums obtained from several cases may be made more or less simultaneously. Thus, the following table gives full particulars of one day's batch :—

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[a] Wright also has shown that immunising substances, other than *opsonin*, are increased in amount by the inoculation of these vaccines.

	Patient's Initials	Disease	No. of Tubercle Bacilli found in 50 Corpuscles	Tuberculo-Opsonic Index
1.	W. W.	Tubercular glands	225	.85
2.	J. S.	? Tubercular hand	255	.96
3.	E. L.	Tubercular glands	166	.62
4.	W. O'C.	Tubercular knee, &c.	357	1.35
5	P. R.	Tubercular hip	201	.76
6.	R. O.	Lupus	234	.88
7.	*Pool*	(Being a mixture of serums obtained from 4 healthy people)	264	1.
8.	M. H.	Lupus	203	.76
9.	N. B.	Lupus	233	.88

The differences in the numbers of bacteria taken up by the leucocytes in the various cases given above depend on differences in the quality of the serums, for the mixtures from which the films were made were treated identically, and so far as their composition is concerned the only variable constituent is the serum. Hence it may be noticed that the serums of these different cases vary as regards the power of inducing phagocytosis. Thus the serum of E. L. (No. 3) has only .62 of the power possessed by the mixture of normal serums (No. 7), which is looked upon as unity; while, on the other hand, the serum of W. O'C. (No. 4) has almost half as much power again as that of normal serum—that is to say, E. L.'s serum possesses a low, while W. O'C.'s serum possesses a high, opsonic index.

It can be readily shown that when the serum is omitted from the mixture from which the films are made practically no phagocytosis occurs. Thus mixtures of equal parts of washed corpuscles, of an emulsion of tubercle bacilli, and of normal saline solution, gave results as under on different occasions :—

	Opsonic Index
Where corpuscles were twice washed	.14
„ „ „ thrice washed	.00
„ „ „ „ „	.04
„ „ „ „ „	.09
and so on.	

Similar negative results are obtained from mixtures of the washed corpuscles and the emulsion of tubercle bacilli only.

It may here be mentioned, in parenthesis, that most of my work has been done in connection with tuberculous cases, and consequently my remarks will, for the most part, be confined to tuberculous affections, except when it may be easier to illustrate certain points by effects obtained in acute processes. In such instances the results obtained in coccal cases will be utilised.

Having then determined that there is something in the blood serum which aids or induces phagocytosis, the following tables will show that there is less of this in the blood of people with local infections :—

CASES EXHIBITING TUBERCULOUS GLANDS

Patient's Initials	Opsonic Index
A. D.	.23 .29
E. B.	.28
B. W.	.38
W. W.	.40
B.	.42
L. C.	.64
J. C.	.65
M. H.	.67
J. K.	.68
E. L.	.71
L. D.	.84
W. W.	.85
J. R.	.87
M. M'B.	.90

LUPUS CASES.

Patient's Initials	Opsonic Index
C. H.	.35
M. W.	.35
M. L.	.43
N. L.	.47
A. D.	.70
M. H.	.76
L. D.	.78
E. T.	.82
M. M.	.87
R. O.	.88
M. M.	1.11

CASES OF TUBERCULOUS BONE DISEASE.

D. R.	Spine	.16 .33
J. O'T.	Spine	.28
P. G.	Hip	.38
K.	Spine	.39
W. B.	Finger	.41
J. H.	Wrist and ankle	.50
M. C.	Spine	.56
P. R.	Hip	.70
J. M.	Spine, &c.	.73
J. G. H.	Hip	.81
C. B.	Rib	.85

OTHER TUBERCULOUS CONDITIONS.

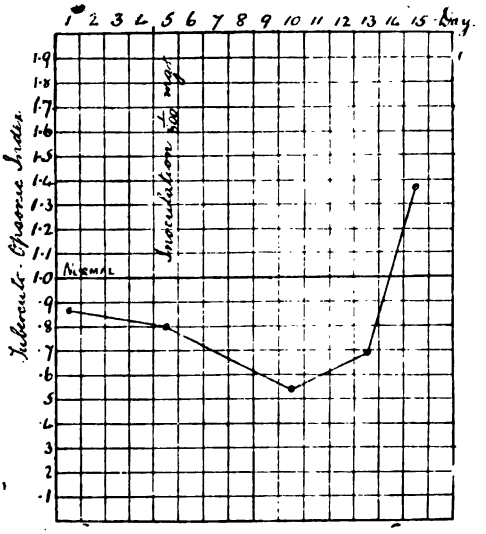
Mrs. H.	Os uteri	.52
B.	Cystitis	.60
S. M.	Peritonitis	.53
F.S.	Peritonitis	.80
L. M.	Cystitis	.83
W. L.	Seminal vesicle	.84
C.	Epididymis and testis	.84
F. G.	Peritonitis, &c.	1.07
C.	Early phthisis	.76 .96 .87
K. Q.	Early phthisis	.90 .58 .60

The above tables show very clearly that people with local infections possess a low index—*i.e.*, they are less amply supplied with protective substances than ordinary individuals. In cases, however, where the disease is not of a limited nature the low index is not the rule, but there is found instead a great variability in the opsonic index when the blood is examined at different times.

CASES OF EXTENSIVE TUBERCULOUS DISEASE.

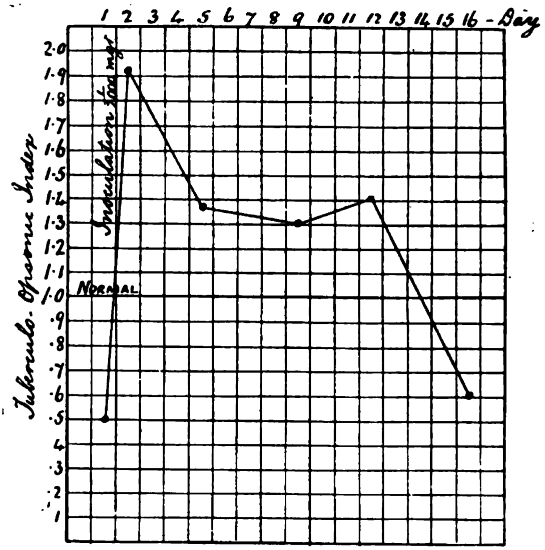
Patient's Initials	Disease	Opsonic Index
H. M.	Multiple joint disease	1.86 .69 1.12 1.32
W. O'C.	Knee, glands and apical phthisis	1.20 1.01 1.35
P. K.	Spine and phthisis	1.01 .54 1.23
H. P.	Advanced phthisis	.60 .88 1.37 .79 1.14

Thus it is seen that in cases of extensive disease the opsonic index displays great irregularity; at one time being nearly twice normal, on another occasion perhaps only half normal, and again it may be in or about normal. Before touching on the reason for this great irregularity it will be necessary to call attention to the effects of a dose of vaccine. Wright has clearly demonstrated these effects. He has shown that "upon the inoculation of a vaccine there supervenes a period "of intoxication which is characterised by a decline in the "anti-bacterial power of the blood." This, which he calls the "negative phase," is "more or less accentuated and prolonged according as a larger or smaller dose of the vaccine is inoculated." The following curve exhibits a "negative phase" resulting from the inoculation of $\frac{1}{800}$ mg. of the tubercle vaccine (T. R.—Koch's new tuberculin).



The negative phase is followed by a "positive phase," in which the anti-bacterial substances as represented by *opsonin* are largely increased. The immediate rise or "flow" is followed by a fall, or by what Wright calls the "reflow," and then for a period which is variable the opsonic content of the blood remains at a higher level than before inoculation. Finally, however, a fall to the original level occurs. Wright speaks of the train of events following inoculation as "the "ebb, flow and reflow, and subsequent maintained high tide "of immunity." The following curve illustrates the positive phase effects of a dose of $\frac{1}{2000}$ mgr. of T. R. The negative phase is not seen in the curve, as it had passed away in the twenty-four hours which elapsed between inoculation and the first subsequent blood examination.

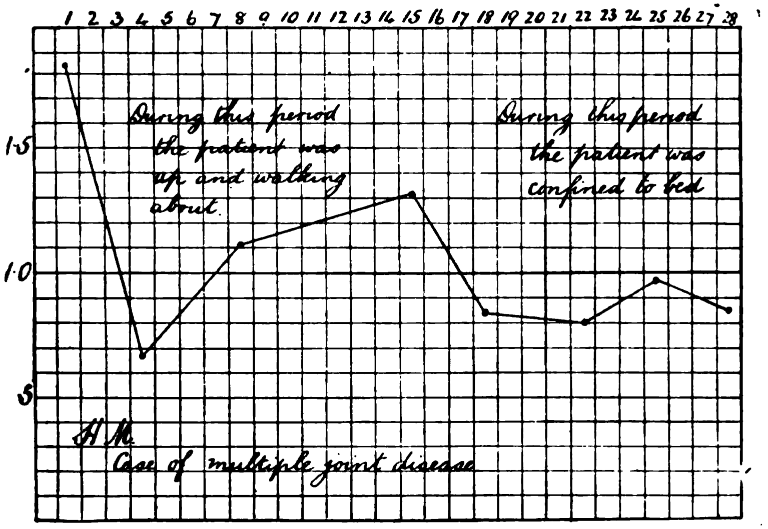
During the negative phase period, when the protective substances are diminished, the disease progresses; while it recedes during the period of the positive phase and "maintained high tide" owing to the large increase in anti-bacterial power.



With the results of a dose of vaccine in mind one naturally concludes that the variations in the opsonic index in cases of the more extensive disease express the effects of varying quantities of bacterial products passing from the diseased areas at irregular intervals into the immediate neighbourhood, and giving rise to effects similar to those produced by vaccines when inoculated—that is to say, the depressions and elevations of the index in these cases correspond to irregular negative and positive phases produced by auto-inoculations.

If this explanation be true it should be possible on the one hand to get rid of or lessen such auto-inoculations by rest, and on the other hand to induce auto-inoculations from local foci of disease by exercise. Both can be done.

The following curve, for example, shows how a patient with multiple joint disease exhibited a very variable index while moving about the hospital wards, but subsequently, as the

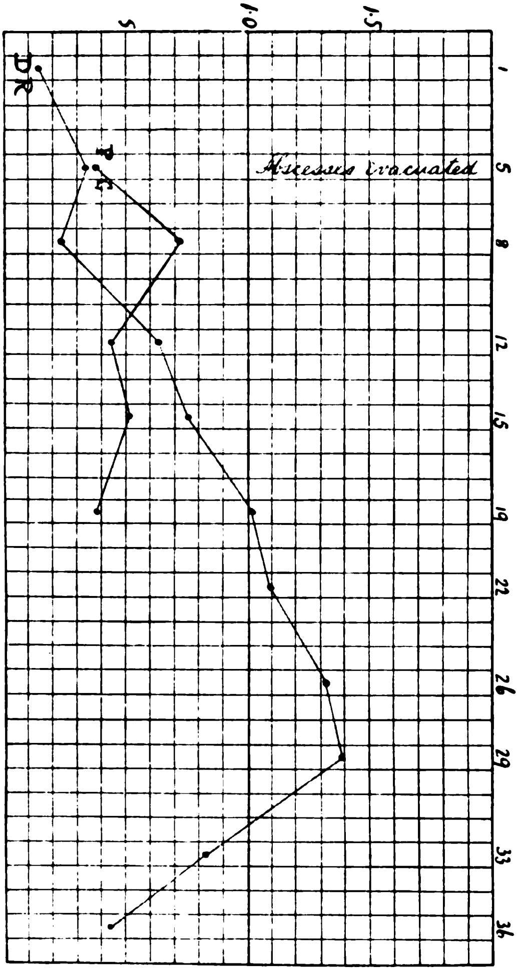


result of being kept quiet in bed, showed a low and comparatively steady index.

A similar result may be seen in the earlier portion of W. O'C.'s curve given opposite p. 181, where, prior to treatment, auto-inoculations were eliminated by keeping the patient in bed.

It is quite easy to demonstrate, as the result of massage of a localised focus of disease, an alteration, or rather a series of alterations, in the index similar to those got by the inoculation of a vaccine. Or, again, let a phthisical patient be examined, made to sit up in bed, to breathe deeply, say "999," and so on, and it is possible to demonstrate a rise of the index which passes off in a few hours. Such a rise is obviously an effect of a tiny auto-inoculation. When a comparatively trifling thing like this will cause an auto-inoculation, we need not wonder to find that a patient with advanced phthisis shows an extremely variable and irregular index.

Perhaps, however, the most interesting of the auto-inoculations are those associated with operations. The effects of surgical operations on the opsonic index are, though sometimes very striking, by no means uniform. In some instances we get, as the result of operation, no marked effect on the



index. In other cases we may get a negative followed by a positive phase, or else a positive phase without any appreciable negative one—that is to say, we get the phenomena associated with the inoculation of a large or a small dose of vaccine. In still another, and perhaps the smallest, group of cases the negative phase is slight in extent and duration, and the positive phase is of a character wholly different from the positive phase obtained as the result of a simple inoculation, the rise of the index to its full height being very gradual and then frequently maintained at or near the maximum for a long period. The longer (D. R.) of the two curves given opposite illustrates this latter class. The shorter curve (P. G.) is an illustration of a very slight effect of an operation on the index.

These cases furnish interesting contrasts in all respects. Each had a large abscess evacuated on the same day. P. G.'s index rose but little, and soon fell to its previous level; clinically he showed no improvement. On the other hand, D. R. exhibited a slight negative phase, but this soon passed off, and the index rose and continued to rise steadily in the manner and during the period indicated by the curve.[a] Her condition clinically showed a continuous improvement during the time the index rose and remained high. When at length the opsonic content of the blood fell to near the original level, the little girl experienced a marked relapse. She, however, ultimately became perfectly well during the subsequent treatment by the inoculation of tubercle vaccine in doses varying in size from $\frac{1}{2000}$ to $\frac{1}{1500}$ mgr. of T. R. The following figures also help to illustrate the effect of operation on the opsonic index:—

Patients Initials		Tuberculo-opsonic Index
F. S.	Tuberculous Peritonitis—	
	Day of operation	.80
	5 days after operation	1.03
	9 ,, ,,	.93
	12 ,, ,,	.70
S. C.	Excision of Tubercular Ribs—	
	2 days after operation	.69
	7 ,, ,,	.91
	14 ,, ,,	1.15
	20 ,, ,,	1.20

Patient left hospital well.

---

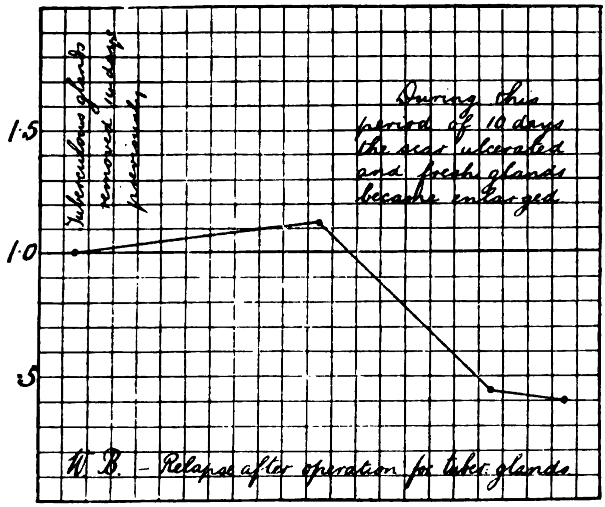
[a] The figures at the top of this and all the other curves stand for so many days. The top of this curve is to the left.

Patients Initials		Tuberculo-opsonic Index
N.	Tubercular Kidneys removed—	
	Day of operation	.57
	2 days after operation	.20
	7 ,, ,,	.72
B. M'D.	Tubercular Kidney removed—	
	7 weeks after operation	1.24
	8 ,, ,,	.97
	9 ,, ,,	1.07
	10 ,, ,,	.79
	From this on the patient's index remained sub-normal.	
A. F.	Tubercular glands removed—	
	3 weeks after operation	1.25

These figures are very significant, and help to explain some of the clinical results in tuberculous cases where only a part of the diseased focus is removed. Such a case sometimes completely recovers. Frequently, however, though marked improvement continues for a time, followed it may be by a period during which the disease remains stationary, relapse ultimately occurs with involvement of fresh areas. So long as the index is high—*i.e.*, so long as the blood is rich in protective substances—improvement continues and the residual disease lessens. If the protective influences are at work sufficiently long, complete cure results. Where relapse occurs the relapse is coincident with a fall in the index. This has been illustrated already in the case D. R., and the following curve furnishes a further illustration.

Both of the cases (D. R. and W. B.), mentioned as illustrative of relapse following an improvement after operation, were finally brought to a successful issue by the inoculation of suitable doses of T. R. properly interspaced.

The increase of anti-bacterial substances in the blood is not the only good effect obtained by operation. Wright has pointed out that the infected area is one of low bacteriotropic pressure, meaning thereby that the infected area is far less rich than elsewhere in protective substances. So far as *opsonin* is concerned this is easily proved. It will be seen from the following examples that the opsonic content of the blood serum is generally markedly greater than the opsonic content of the pathological fluid obtained from the diseased area.

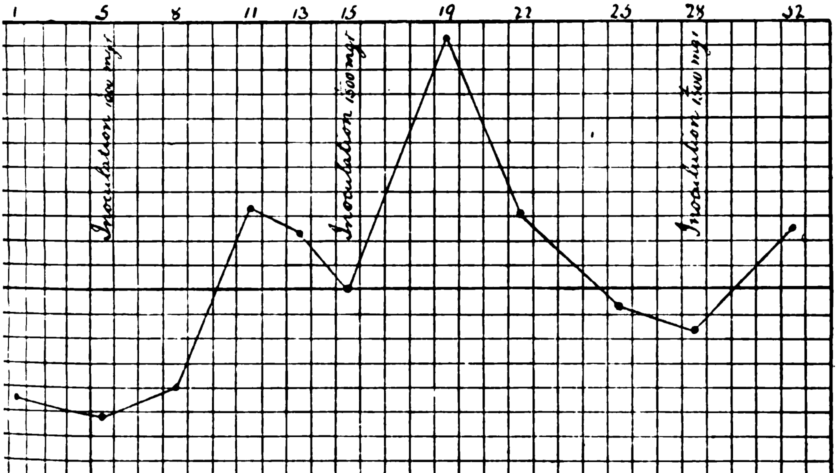


Patients Initials		Tuberculo-opsonic Index
S. M.	Tubercular Peritonitis—	
	Blood serum	.53
	Peritoneal fluid	.28
J. B.	Tubercular Meningitis—	
	Blood serum	.92
	Cerebro-spinal fluid	.06
C. B.	Tubercular Rib—	
	Blood serum	.91
	Pus serum	.62
H. M.	Multiple Tubercular Joint Disease—	
	Blood serum	.81
	Pus serum (back)	.51
	Pus serum (wrist)	.38

A vigorous interchange between the fluids in the affected area and its neighbourhood and the general body fluids may result from the disturbance created by operative procedure. Hence bacterial products giving rise to inoculation effects are sent outwards, and fresh fluids, rich or comparatively rich in protective substances, come inwards to take the place of those which had been removed. Thus there may be a double beneficial effect after operation—viz., a general rise of the index, and a local substitution for a fluid poor in anti-bacterial substances of a much richer one. For example, a large tuberculous abscess pointing near the great trochanter was opened and evacuated. The tuberculo-opsonic index of the blood serum was .33, while that of the pus serum was .04, or practically *nil.* Seven days afterwards, when the fresh accumulation was evacuated, the blood index had risen to .62 and that of the pus to .57.

Hence, in certain instances, the surgeon appears to have unconsciously carried out to some extent the principles of the therapeutic inoculation of bacterial vaccines. As already indicated, in many cases the beneficial inoculation effects induced by the operation do not last sufficiently long to effect the complete cure of the residual disease, but after a period of improvement relapse occurs. A study of the index shows relapse to follow its fall. Relapse, however, may be avoided, and the work of the surgeon in most instances crowned with success, while at the same time the patient will be saved much future misery and suffering from further and often fruitless operations, if at the time the auto-inoculation effects of the operation are passing away the patient is inoculated with suitable and properly interspaced doses of vaccine.

This class of case, however, is not the only one in which good results are obtained from the inoculation of tubercle vaccine controlled by estimations of the tuberculo-opsonic index. Improvement and cure will result in any case where the index can be raised from its sub-normal position and maintained more or less continuously above normal for a sufficiently long period, and this in conditions which are not amenable to ordinary surgical treatment. Thus after twelve weeks a case of tuberculous cystitis left hospital practically well. During her stay in hospital she got seven inoculations, and, from a condition which compelled very frequent micturition and in which the urine contained large numbers of tubercle bacilli, she passed gradually to one in which the bacilli, even after repeated examinations, could not be found in the urine, and in which she was not obliged to pass water more than once at night. Again, a case of tuberculous disease of a seminal vesicle got completely well after seven injections spread over about four months. The curve below exhibits the effect of inoculations on the tuberculo-opsonic index in the case of a young married woman suffering from profuse vaginal discharge due to tuberculous ulceration of the *os uteri*. The discharge, which contained numerous tubercle bacilli, rapidly diminished, and the general condition of the patient improved amazingly. A vaginal examination, made after twenty-two days' treatment, showed a distinct diminution in the size of the ulcer, and some days later the patient insisted that she was quite well, and refused to stay in hospital any longer. Unfortunately the inoculations could not be continued outside, as her home



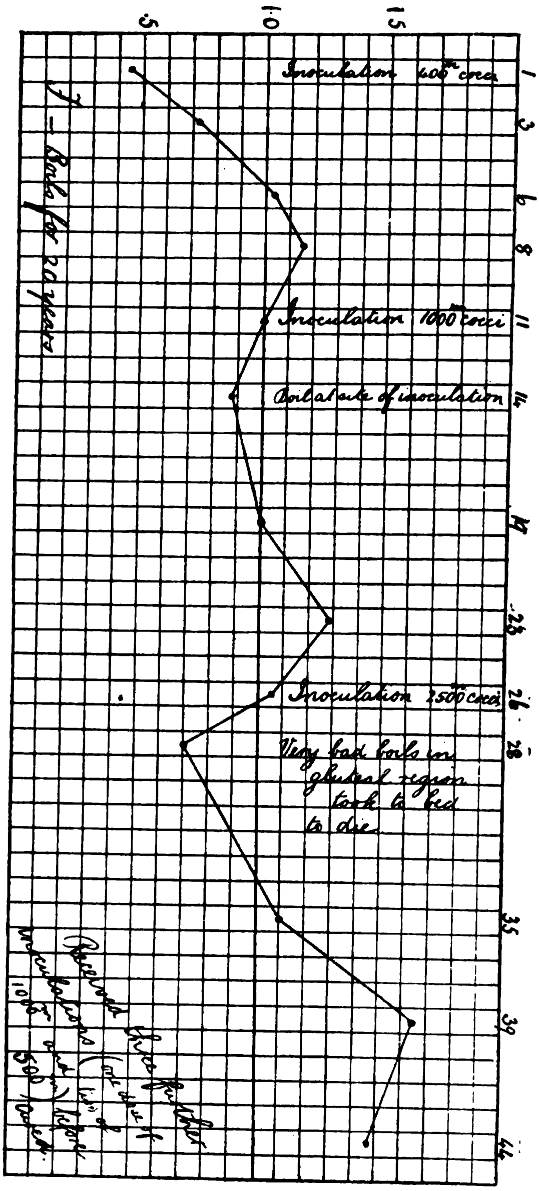
lay far from Dublin. Inquiries made some months afterwards showed the improvement to be fully maintained.

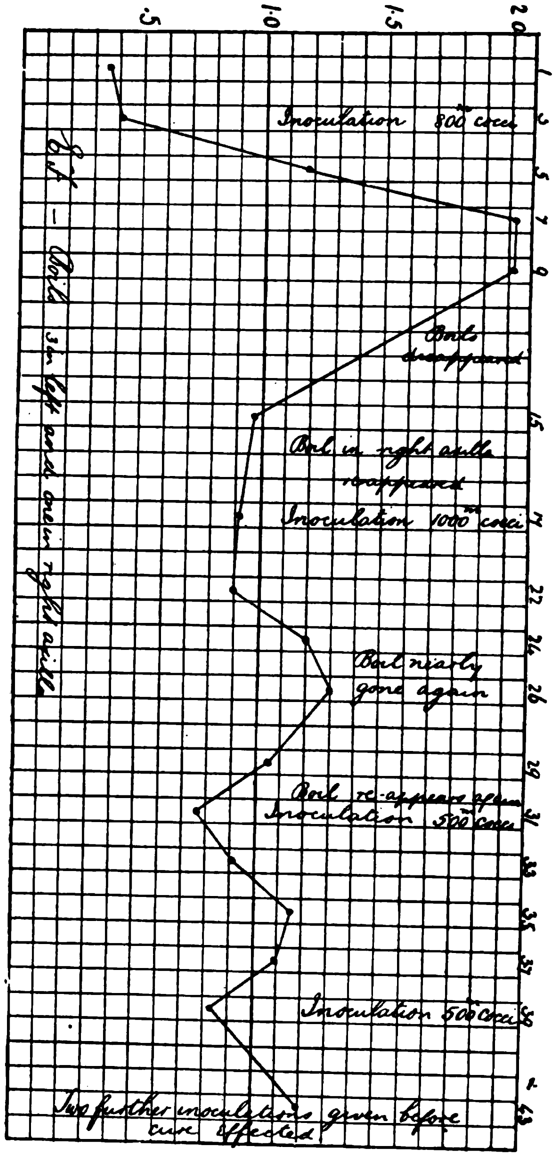
If by the inoculations a continuously elevated index is not maintained, and marked interruptions in the nature of negative phases occur, the disease fluctuates, diminishing while the index is high, and progressing—often very rapidly—while it is low. This can be seen by a careful study of tuberculous cases, but can be more easily demonstrated in acute infections. The two following curves from cases of furunculosis in a father and daughter furnish excellent illustrations of the manner in which disease tends to progress when the index is low and to recede when the index is high.

It will be noticed in the curve of Case F. (page 177) that the earlier doses, being too large, produced marked negative phases. Clinically at these times the existing boils became distinctly worse, and fresh ones appeared. During the positive phases more or less amelioration occurred. In such a case as this the increased anti-bacterial power of the blood during the positive phase has to combat the existing disease reinforced by the negative phase effect. Hence the net result of an inoculation may be an increase of the disease rather than, what is desired, a diminution. The cure of this patient was not effected until the dose was reduced. so that the negative phase effect was practically eliminated and a series of successive positive phases obtained.

From the curve in Case E. F. (page 178) it can be seen that as a result of the first inoculation the boils in the girl's axillæ disappeared completely, but so soon as the effects of the inoculation died away one of the boils reappeared, and continued to get larger until the index was again raised by a further inoculation. This clearly shows that the disease tends to disappear with the high index and progresses with the low, so that treatment may be, as in this case, unduly prolonged by pronounced delays between inoculations.

Most of the difficulty of keeping the index at a high level is due to one's own deficiencies or inexperience. Occasionally the difficulty lies with the patient. Some patients differ enormously from the average, both in regard to the size of


7 — Boils for 20 years
·5
1·0
1·5
1
3
6
8
11
14
19
23
26
28
35
39
44
Inoculation 400th cocci
Inoculation 1000th cocci
Boil at site of inoculation
Inoculation 2500th cocci
Very bad boils in gluteal region took to bed to die
Received three further inoculations (one dose of 1000th and two of 500) later.


E.A. – Boils 3 in left and one in right axilla
·5
1·0
1·5
2·0
1
2
5
7
9
15
17
22
24
26
29
31
33
35
37
39
42
43
Inoculation 800 cocci
Boils disappeared
Boil in right axilla reappeared
Inoculation 1000 cocci
Boil nearly gone again
Boil re-appears again
Inoculation 500 cocci
Inoculation 500 cocci
Two further inoculations given before cure effected

the dose and the power of response. For example, 400 million cocci will ordinarily produce but a slight negative phase, and yet in a case of chronic acne in a young girl the writer found that even an eighth of that dose produced a marked negative phase effect. Again, it happens that a patient responds well to a few first doses of vaccine and subsequently ceases to respond. In one such case, after stopping inoculation for a time, the patient again responded when later on inoculations were resumed.

Having then arrived at the conclusion that good results are to be obtained when the index is maintained at a high level by the inoculation of properly interspaced doses, the next question to be decided is whether similar good results are obtainable, without all the trouble of blood examinations, by merely giving small doses at intervals of ten or twelve days. The reply to this must be an emphatic NO, and for many reasons. Some of these reasons are already apparent.

In order to get the best results the size of the dose most suitable to the individual patient must be determined, and also the duration of its effects. Take a dose of a given size, inoculate a number of patients with it, and its full effects, negative and positive, will be seen to vary very considerably.

Thus, on the same day, five patients were each inoculated with $\frac{1}{1000}$ mgr. of T.R., and the duration of the inoculation effects in each case was as follows:—

(*a*) Case of cystitis—13 days.
(*b*) Case of glands—7 days.
(*c*) Case of glands which relapsed after operation—21 days.
(*d*) Case of early phthisis—16 days.
(*e*) Case of glands—14 days.

Some cases may do well by routine inoculations, but a great many will not, because if a dose is repeated too soon a negative phase may result from the second inoculation, and a still more accentuated one from the third dose, and so on, until finally it may happen that a continuously low index is induced. As a consequence, in such a case positive injury results, and the treatment is unjustly discredited. If the dose is too large the good effect of the positive phase will be more than neutralised by the evil of the negative—*i.e.*, the positive phase, as we have already seen, has to combat not only the existing disease but the increase of the same which results during the negative phase.

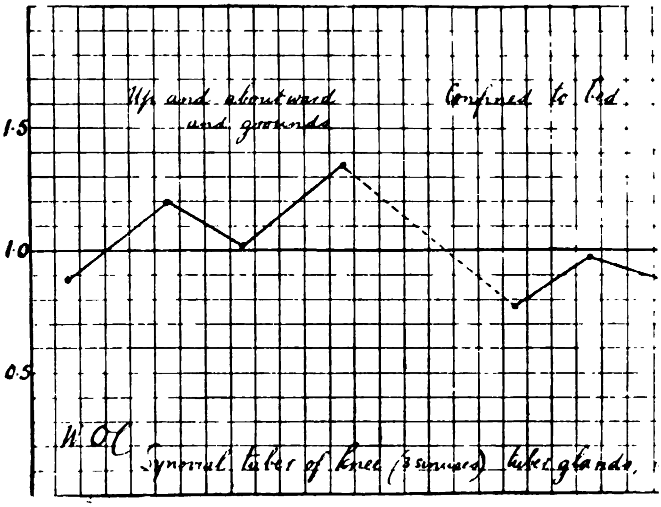
On the other hand, if the dose is too small the index is raised only for a portion of the interval between the doses, and treatment is unduly prolonged. This is, of course, a less evil.

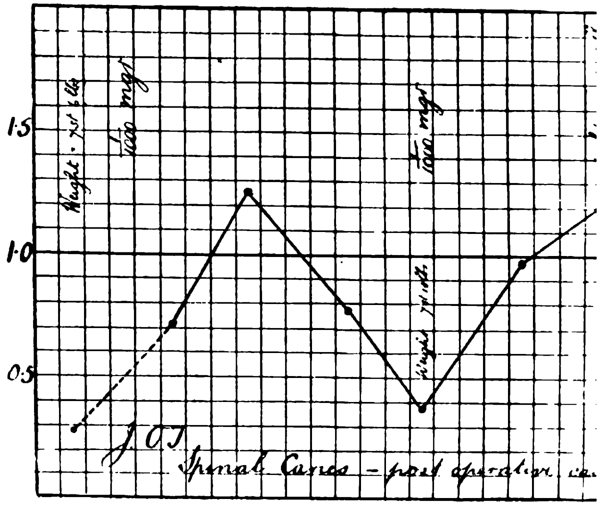
The size of the dose most suitable to a patient is that which gives a negative phase measured by hours and not by days, and this can be determined only by blood examination. A dose which gives only a slight negative phase with one patient may give a marked negative phase with another, and occasionally will give one which may be recognised clinically by headache and malaise. The writer has known a dose of $\frac{1}{1200}$ mgr. of T. R. give a mild but distinct "tubercular reaction," and there is a wide gulf between such a reaction and the negative phase which lasts less than twenty-four hours, and which can be recognised by blood examination alone. As we have already seen that negative phases are distinctly bad, the necessity for the administration of doses which give minimal negative effects is obvious.

Having then determined the size of the dose the next important thing is to ascertain how long its action will last, as no further dose should be given until the effects of the previous one are passing off.

If the dose suitable to the patient and the period of its duration are determined it will then, in ordinary cases, only be necessary to examine the blood twice during an inoculation period—on the day of inoculation and on the next day. If on the latter day the index is higher than it was the day before all is right; if, on the contrary, it is lower it probably means a premature inoculation.

Too much stress can hardly be laid on the fact that good results depend largely on the success of one's efforts to keep the index continuously at a good average level. In other words, the whole secret of successful treatment is to induce a succession of positive phases with as little interruption be-


Up and about ward
and grounds
Confined to bed.
1.5
1.0
0.5
W.O.C.
Synovial tubc. of knee (3 sinuses) tubc. glands.


Weight 7st 6lbs
1/1000 mgr
1/1000 mgr
Weight 7st 10lbs
1.5
1.0
0.5
J.O.T.
Spinal Caries – post operation ca

tween each as possible either from negative phases or from undue delay in the administration of the doses.

A study of the complete curves in the cases W. O'C. and J. O'T., facing this page, will show that in each instance towards the termination of the treatment an almost ideal condition of the tuberculo-opsonic index was reached. Both patients did remarkably well. When the former first came under observation he had left apical phthisis, a number of suppurating glands with many old scars, and tubercular synovial disease of the knee-joint with three discharging sinuses. When the auto-inoculations which he was evidently receiving were eliminated by putting him to bed and keeping him there, treatment began and was continued during a period of twenty-five weeks. One after another of the sinuses healed, and the knee completely regained its normal size and mobility, and this before the tuberculous glands were entirely healed. The pulmonary lesion made no progress during treatment, and still existed when the inoculations ceased. The other patient (J. O'T.) suffered from tuberculous disease of his spine. The tuberculous focus had been carefully scraped, but after several weeks the sinus in the lumbar region showed no sign of healing, and the discharge continued unabated. This patient, a boy of sixteen, received altogether ten inoculations spread over a term of twenty-one weeks. In less than a month the discharge had almost ceased, and after he received the eighth inoculation the sinus was completely healed with a depressed scar; at the same time no discomfort of any kind could be detected over or near the portion of the spine previously diseased. It will be noticed that this patient gained fourteen pounds in weight during the first two months. A gain in weight such as this is frequently observed as a result of the inoculations.

Incidentally here and there in the course of this paper cases have been mentioned which improved or got perfectly well. The writer would like here to make it clear that he has treated many cases of tuberculous disease which exhibited no definite improvement. This may have been his own fault, partly due to inexperience and partly to the fact that he was obliged by the exigencies of other work to limit his interest in these cases for the most part to two days in each week. There is no doubt that this limitation prevented the best results from being obtained. At the same time, however, my notes show that with a single possible exception all cases that showed no marked improvement were treated for less than three months, many of them, indeed, for less than one. To discard the treatment as useless in any tuberculous case after a trial of less than three months shows an inadequate appreciation of the nature of a tuberculous affection.

The possible exception referred to above is a case of phthisis which is still under treatment. During the first five months when inoculations were given and carefully controlled, she improved distinctly. Then a holiday of some seven weeks intervened, during which she got inoculated in a haphazard fashion. At the end of this period she was much worse, and it seemed hopeless to continue treatment. However, when the careful control of inoculations was resumed she gradually improved, and at present appears to be very little better or worse than she was sixteen months ago. The one outstanding fact in connection with the injections in this case is that the patient's evening temperature now ranges between 97.4° and 98.8° instead of between 99.2° and 100.4°.

Another case of early phthisis ended in the complete disappearance of all symptoms after less than two months' treatment. The case was that of a girl of about fifteen years of age, with a consolidated left apex and sputum of a catarrhal nature containing tubercle bacilli.

Of ten tubercular gland cases all improved. Six of them have got perfectly well in 4, 14, 15, 19, 21, and 27 weeks, respectively. The other four are still under treatment. One of the latter, now practically well, has been getting inoculations for upwards of sixteen months. He had been operated on about three months before the inoculations began, but it is impossible to conceive how his condition could be adequately dealt with by any operation or series of operations. The whole front of his chest from shoulder to shoulder was a mass of ulcerated, suppurating and enlarged glands. It is no exaggeration to say that hundreds appeared to be involved. His neck was also ulcerated and full of large suppurating glands. The patient steadily improved from the first. The improvement was continuously maintained, except during the holiday period, at the end of which he presented himself very much worse in many respects than originally. Since then, however, all the enlarged glands except one have disappeared, and every ulcerated one has healed.

Four lupus cases, all extremely bad and very chronic, are under treatment, and have been for over a year. One case is nearly well, two have greatly improved, and the other has improved but slightly. It has been found difficult to raise the latter's index, and impossible, so far, to keep it up for many days consecutively.

Although it usually happens that no good results accrue from the inoculations unless the index is raised to or above normal, I have seen a case improve where the original sub-normal tuberculo-opsonic index was but slightly increased. Such a case is understandable if we bear in mind that we are measuring *opsonin* merely, as the explanation may be that it alone of the many substances concerned in the immunising process fails to be produced in an increased quantity.

Treatment should not begin and end with the inoculation of suitable doses repeated at the proper times. Every other means likely to help should be employed. Also it must be kept in mind that local conditions may prevent the diseased area from getting the full benefit of the increase in *opsonin* and all that it represents. Hence anything likely to diminish the difficulty of exchange and promote a good flow of lymph to and from the part should be adopted. The surgeon must do all that is possible by removing fluid secretions, pus collections, and necrosed tissues—especially bone. Where possible, as in the case of sinuses, lymphagogues should be used. In some instances the site of inoculation seems of importance. The danger of treating patients while auto-inoculations are going on must never be forgotten.

The claims put forward by Wright and his pupils, and enunciated at the beginning of this paper, are in my belief substantially true. The worst that can be said of the therapeutic inoculation of bacterial vaccines controlled by the opsonic index is that the methods are laborious, but what of that if good results, not to be got otherwise, are obtained? In estimating the merits of this method of treating infectious disease it must be remembered that we are striving after an ideal effect, and that the nearer we approximate thereto the better will be our results. Also that this ideal, which is to keep the blood and body fluids continuously supplied with an increased amount of protective substances, cannot be even approximately reached without conscientious care and much labour. As our experience increases and our knowledge of disease and immunity grows greater, improvement in method with lessening of labour must come. It may be that an easier plan of following the immunising process will be devised, but the essential principle of the treatment will remain and be in the years to come a powerful factor in Practical Medicine.

ART. VII.—*Report of the Rotunda Hospital.* By E. HASTINGS TWEEDY, F.R.C.P.I. (Master); ARTHUR HOLMES, M.B., B.Ch., B.A.O.; and ROBERT J. ROWLETTE, M.D.

(Continued from page 110.)

TABLE NO. V.—*Continued.*

Name	Age and Para	Date	Variety	Treatment	Result to Mother	Result to Child	REMARKS
S. M.	21, I.	1906 May 21	External	Plugged	Recovery	Dead	8 months' *child.* Delivery followed plugging 3¼ hours. Adherent *placenta.* Manual removal.
A. L.	26, III.	July 1	,,	Rupture of membranes	,,	,,	Patient in *strong* labour. Free hæmorrhage. Membranes tough and very protruding.
M. R.	24, III.	,, 15	,,	Tight binder and forceps	,,	,,	Patient admitted blanched and with air-hunger. Full term.
M.E.M.	35, XI.	Aug. 8	Concealed	Plugged and tight binder	Death	,,	Vide mortality table (Maternal). No. VI.

TABLE No. VI.—*Placenta Prævia.*

Name	Age and Para	Variety	Period	Result to Mother	Result to Child	Presentation	Remarks
M. K.	37, X.	Marginal	8th month	Recovery	D.	Vertex	Version. Delivery in 19 mins.
M. M.	25, II.	Central	Term	,,	,,	,,	Version. Irregular hæmorrhage for four weeks.
E. C.	40, II.	,,	,,	Death	,,	,,	Version. Vide mortality (maternal) No. II.
J. C.	32, V.	Marginal	8th month	Recovery	A.	,,	Patient in strong labour. Portion of placenta in vagina. Nothing done.
L. G.	23, II.	Lateral ?	Term	,,	D.	,,	Portion of placenta in front of head at birth. In strong labour. Nothing done.
M. M.	23, I.	Central	7th month	,,	A.	,,	Admitted plugged; the plugs removed; no hæmorrhage. Version performed. Delivery in five hours. Placenta battledore.

TABLE NO. VII.—*Contracted Pelves.*

Name	Age	Para	Pelvic Measurements					Mode of Delivery	Result to Child	REMARKS
			C. V.	Trans.	Ext. C.	I.-C.	I.-S.			
M. H.	30	II.	8	13	15	28	25	Cæsarean Section	Alive	Second operation.
S. F.	34	III.	7	11·5	20	27	28	Version	Dead	Induction at 36th week; second time.
M. K.	43	XI.	6	11·5	18	31	29	Spontaneous	Alive	Induction, 37th week; 8th time.
M. G.	22	II.	8	13	—	—	—	Spontaneous	Alive	Symphysiotomy performed previously.
E. K.	27	III.	9	11·5	18·5	29	27	Forceps	Dead	Induction, 39th week; 3rd induction.
M. W.	27	II.	7·2	—	18	28	26	Spontaneous	Alive	Labour prolonged for 20 hours; previous confinement normal.
S. M.	23	III.	7·2	13	18	31	31	Version	Dead	Labour induced, 37th week; head did not fix, so podalic version was done.
T. M.	28	III.	7	12	17	27	27	Spontaneous	Dead	Induction, 28th week; breach presentation. Previous labours, 1st term, forceps; 2nd term, version.
J. F.	24	III.	7·7	11·2	20·5	28	27	Expression	Alive	Induction, 38th week; prolapse of cord. Previous labours, term, forceps; both children dead.
M. P.	16	I.	8	11·5	19	25	25	Spontaneous	Alive	Face presentation.
L. K.	21	I.	6·8	—	15·5	26	24·5	Forceps	Alive	Prolonged labour; small head, which moulded well.
G. L.	27	I.	7	11	20	27	26·5	Expression	Alive	Induction, 32nd week; compound presentation, head and hand. Small child; weight, 4¾ lbs.
M. T.	30	III.	7·5	10	17·5	24	24	Forceps	Alive	Term, occipito-posterior. Dorsal curvature.

Table No. VIII.—*Forceps.*

Indication	No.	Dead Children	Remarks
Delay in second stage, with danger to mother or child	34	3	One of the children was macerated.
Prolapse of cord	4	—	
Contracted pelvis	3	—	*Vide* contracted pelvis, Table No. VII.
Occipito-posterior	3	—	
Eclampsia	2	1	Os fully dilated, and head low down in both cases.
Induced labour	1	1	*Vide* E. K., contracted pelvis, Table No. VII.
Accidental hæmorrhage	2	1	*Vide* accidental hæmorrhage, Table No. V., K. C. & B. G.
Face presentation	1	—	
Brow presentation	1	1	Patient admitted from outside with a history of having been 68 hours in labour. *Vide* "Eclampsia" case No. 7, M. O'D.
Total	51	7	

Sub-table A.—*Showing No. of Pregnancy.*

I.-para	36
II.-para	4
III.-para	4
IV.-para	1
V.-para and over	6
Total	51

Sub-table B.—*Showing Ages of Patients.*

17–25	22
26–30	17
31–35	7
36 and over	5
Total	51

TABLE NO. IX. A.—*Morbidity.*

Estimation proposed by British Medical Association.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Temp. was twice 100° or over, counting from the end of first 24 hours of the puerperium to 8th day, inclusive.	4.44	5.19	8.17	10.79	11.87	8.84	6.62	14.10	8.23	8.13	4.57	10.25	
	Total percentage ...												8.43

TABLE NO. IX. B.—*Morbidity.*

Rotunda Estimation.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total.
Temp. and Pulse over 99° and 90 for three consecutive takings between 2nd and 8th day.	2.22	3.25	5.72	3.52	5.00	6.80	6.07	5.76	4.11	4 06	1.71	3.84	
	Total ...												4.33

TABLE NO. IX. C.—*Morbidity.*

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total.
Percentage of cases in which both estimations existed.	2.22	2.59	5.03	3.52	3.75	6.80	4.41	5.76	3.52	3.90	1.71	3.84	3.92

TABLE NO. IX. D.—*Comparison of Morbidities.*

PRIMIPARA.

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Percentage of morbidity occurring with primiparæ.	3.92	12.19	18.96	17.54	22.40	14.03	13.88	26.53	16.39	13.33	6.55	18.03	15.31
MULTIPARA.													
Percentage of morbidity occurring with X-para.	4.76	3.53	2.97	6.09	7.84	5.55	3.66	9.34	4.49	6 18	2.63	5.26	5.19

TABLE No. IX. E.—*Causes of Morbidity other than Uterine.*

Breast abscess	2
,, inflamed	2
Constipation	7
Eclampsia	4
Influenza	5
Pneumonia	1
Puerperal ulcer	3
Hæmorrhoids	2
Typhoid	1
Urticaria Herpetiformis	1
Phlegmasia alba dolens	3
Alveolar Abscess	2
Total ...	34

TABLE No IX. F.

Number of Lacerated Perinæums Showing Morbidity for Year.

English estimation - - - - - - -	33
Rotunda ,, - - - - - - -	10
Both ,, - - - - - - -	28
Total,	71

Operative Cases Showing Morbidity.

Forceps (English, 3; Rotunda, 2; Both, 8) - - - -	13
Manual removals (English, 2; Rotunda, 1; Both 5) - - -	8
Induction of labour (English, 1) - - - - -	1
Abortion removal (English, 1) - - - - - -	1
Breech (English, 1; Both, 1) - - - - - -	2
Plugging for P.P.H. (Both, 1) - - - - - -	1
Total,	26

Of these morbid operative cases 8 were associated with lacerated perinæum.

Table No. X.—*Maternal Mortality.*

Name	Admitted	Delivered	Died	Cause of death	Notes
A. H.	Mar. 3	Mar. 3	Mar. 4	Labour Shock	
E. C.	Mar. 16	Mar. 16	Mar. 16	Hæmorrhage	Placenta Prævia
E. N.	May 19	May 20	June 25	Pyæmia	
M. O'N.	June 24	June 25	July 13	Typhoid	Admitted with disease
M. K.	July 20	July 22	July 22	Labour Shock	
M. M.	Aug. 8	Aug. 8	Aug. 8	Hæmorrhage	Concealed Accidental
M. G.	Oct. 14	—	Oct. 14	Eclampsia	Undelivered
E. H.	Oct. 27	Oct. 27	Oct. 27	Labour Shock	*Post-partum*

PATHOLOGICAL REPORT.

By Robert J. Rowlette, M.D.

The work of the Pathological Laboratory has been, as heretofore, almost entirely in the field of clinical pathology, subservient to the ordinary work of the Hospital. It is concerned with both the Maternity and Gynæcological Wards, but chiefly with the latter. The number of specimens submitted for examination during the year is considerably in advance of that during the previous year. This increase is most marked in the specimens, such as curettings, submitted to obtain aid in diagnosis—eighty-four this year as compared with forty-four in nine months and a half of last year—and is, I believe, due to a growing recognition of the importance of microscopic examination in the diagnosis of morbid conditions.

The museum is gradually increasing, and will form, I hope, the nucleus of a collection of importance in the special field of gynæcological pathology.

Eight *post-mortem* examinations were made on the bodies of adult patients. Brief notes of these are appended :—

Case I. (Gynæcological).—Eliza d'A. Death twenty-four hours after operation for carcinoma uteri. Autopsy partial. Only abnormal condition found—quantity of blood in peritoneal cavity.

Case II. (Gynæcological).—Kathleen J., aged twenty years; died May 31, 1906, one week after exploratory operation on tumour of abdomen. Operation had revealed an inoperable mass adherent to the anterior abdominal wall from the umbilicus to the pubes. As it was impossible to attempt removal, the abdomen was closed.

At the autopsy, which was partial, the tumour was found to be the stomach, still adherent to the anterior abdominal wall and to the bladder. Its wall was thick, soft, pulpy, and white, the entire wall being affected. Internally, large flat ulcers were discovered. Secondary masses were present in the omentum.

Microscopically the tumour was found to be a columnar-celled carcinoma.

Case III. (Maternity).—E. N., aged twenty-eight years. Death seven weeks after labour.

Heart normal.

Lungs.—Advanced phthisis in both lungs. Large hæmorrhagic infarcts in both lungs.

Spleen.—One large hæmorrhagic infarct.

Uterus firm, small, without any sign of inflammation. Small fragment of placenta in left cornu. Right uterine veins enlarged and thrombosed, thrombus stretching into right iliac vein.

Other organs healthy.

A pure culture of *B. coli* was obtained from the uterus and spleen, and *B. coli* and a diplococcus were separated from the lungs.

Case IV. (Maternity).—O'N., aged twenty-one years. Died of typhoid fever (Widal test positive) three weeks after delivery.

Heart.—Small and pale.

Lungs.—Hypostatic congestion; slight broncho-pneumonia; old tubercle at left apex.

Liver.—Normal.

Spleen.—Normal, neither enlarged nor congested.

Intestines, Small.—Slight ulceration of Peyer's patches near ileo-cæcal valve.

Intestines, Large.—Extensive ulceration of cæcum and descending colon.

Mesenteric Glands.—Large and soft.

Uterus.—Firm and healthy, although containing a few shreds of adherent placenta.

Case V. (Maternity).—Mary Ellen M., aged thirty-five years. Died immediately after delivery. Examination of brain only—entirely negative.

Case VI. (Gynæcological).—Anna Maria M., aged sixty-three, observed August 24, 1906, while awaiting operation for myoma.

Lungs.—Healthy. A few old tubercles at both apices.

Heart.—Covered with fat. Muscle apparently healthy.

Abdomen.—Very marked effusion, nearly a gallon of fluid being present. Fluid is turbid and white.

Peritoneum.—Thick and leathery, with fibrinous exudate. Scattered adhesions.

Bladder.—Adherent to uterus.

Mesenteric Glands.—Enlarged.

Appendix.—Enlarged; internally red and ulcerating.

Spleen.—Small and pale.

Liver.—Pale.

Kidneys.—Healthy.

Uterus contains globular fibroid, five inches in diameter, in anterior wall. Cavity contains semi-purulent fluid.

Culture of *Diplococcus pneumoniæ* from peritoneal fluid.

Case VII. (Gynæcological).—M. B., aged thirty-six years, observed September 3, 1906, four days after myomectomy. *Post-mortem* four hours after death.

Heart.—Healthy.

Lungs.—Posterior bases congested. Otherwise healthy.

Abdomen.—Wound healthy and healing. A few ounces of blood-stained fluid in peritoneum. Blood clot size of fist at stump of uterus. Concretion in appendix.

No peritonitis.

Cultures from peritoneal fluid, from appendix, and from heart blood negative.

Case VIII. (Maternity).—M. K., aged thirty years, primipara, died four and a half hours after the birth of child. Only pathological condition discovered—a slight rent, one and a half inches long, in peritoneum covering back of uterus; the rent did not go deeper than the peritoneum.

For clinical references to Cases III., IV., V., VIII., see Clinical Report.

Curettings or other fragments were examined for purposes of diagnosis on 84 occasions:—

TABLE I.—EXAMINATIONS OF CURETTINGS OR OTHER FRAGMENTS FOR PURPOSES OF DIAGNOSIS.

Endometritis	51
Congested endometrium	1
Placental remains	7
Squamous-celled carcinoma of cervix	2
„ „ vagina	1
„ „ vulva	1
Adeno-carcinoma of uterus	4
„ „ vagina (secondary)	1
Mucous polypus	1
Erosion of cervix	2
Syphilitic ulcer of vulva	1
Urethral caruncle	1
Tubercular peritonitis	1
Blood clot, debris, normal tissue, &c.	10
Total	84

In the above table all forms of endometritis have been grouped together. In attempting to classify them one is met by two great difficulties, one indeed dependent on the other. First, although many principles of classification have been put forward, there is none which has received general acceptance. Secondly, morbid conditions of the uterine mucous membrane do not fall into separate classes, distinct like watertight compartments. The same specimen presents most commonly several distinct variations from the normal, which it is impossible to sum under one descriptive title. In consequence, different observers, even when attempting to classify on the same principle, would furnish different tables of results from an examination of any given series of slides.

I therefore have to content myself with certain descriptive terms, recognising that as a principle of classification they would be logically inadmissible, since they are neither exhaustive nor inclusive. The name in each case merely states the most striking feature of the specimen :—

TABLE II.—CASES OF ENDOMETRITIS.

Hypertrophic or glandular (including cystic)	30
Interstitial	4
Simple	15
Polypoid	1
Hæmorrhagic	1
Total	51

The term "*hypertrophic*" or "*glandular*" is applied to those specimens which show an undoubted increase of glandular tissue, whether the glands show dilatation or not. It will be seen that three-fifths of all the specimens fall under this head. Naturally, they present great variety. In some of them the glands are merely increased in number, but are quite normal in appearance. In others, there is a distinct proliferation of epithelium, forming tufts, protruding into the glands. In others, again, the glands show marked dilatation as if by the collection of secreted material.

These various forms have all been illustrated in Dr. Purefoy's Clinical Report of the Hospital for 1902–3. In certain of the cases—three in number during the present year—the dilatation of the glands was of such a degree as to merit the classification "cystic endometritis." This condition has been regarded by some as a distinct form of disease, and even as an intermediate stage between endometritis and malignant disease. It is true that the clinical features are somewhat distinctive, and in particular, recurrent hæmorrhage is a marked symptom. On the clinical side, therefore, there is often a suggestion of malignancy, and in the three cases under review, as well as in some other cases which have come under my notice, the question of malignancy was prominent in the mind of the physician in charge of the case. I do not at all agree, however, that the condition is a step in a change towards malignancy. Malignant changes in the endometrium are marked by excessive epithelial proliferation and diminished function, whereas in cystic endometritis the epithelial growth rather lags behind in comparison to the amount of secretion. That the dilatation is due to an excessive secretion or to a blockage of the duct of the gland is suggested by the fact that the larger the cyst the flatter are the cells lining it. In the same section one finds all the stages between normal glands lined with columnar epithelium and cystic spaces lined with almost flat cells. In very few cases of genuine adenocarcinoma of the uterus have I seen any tendency towards cystic forms of gland.

The term "*interstitial*" has been applied to those specimens in which increase of the connective tissue was marked and change in the glands inconspicuous. The number of cases falling under this head was relatively small.

Fifteen cases are described as "*simple*," though the term is open to objection. The terms "*septic*" and "*diphtheritic*" have been applied by others to this condition. The noticeable feature is the inflammation varying greatly in degree, but unaccompanied by productive changes either in the glands or in the connective tissue. In some cases there is merely congestion of the part with some degree of leucocytic infiltration. In others the change is so severe as to produce necrosis, and the curetting may be a mass of necrotic material mixed with cellular exudate. All stages between these extremes are to be found.

One case is described as "*polypoid*." In it there was a marked increase of the superficial epithelium forming tufted polypoid projections. The epithelium, however, was so regular in its arrangement as to prohibit any thought of malignancy.

One case is described as "*hæmorrhagic*." In it no change was to be observed except the marked congestion and great infiltration of the tissues with blood. Of course, in many of the cases hæmorrhagic infiltration was noticeable, but in this case it was practically the only pathological condition present.

The diagnosis of adeno-carcinoma of the uterus from endometritis by examination of curettings is not always easy. The great majority of cases of endometritis, of course, convey no suggestion of malignancy. On the other hand, where a doubt rises, the condition is probably malignant. In two cases during the year from an examination of the curettings I could not go further than to say that there was a suggestion of cancer. Relying on the clinical signs the uterus was removed, and showed undoubted evidence of carcinoma. It is to be remembered that the change may be much more advanced at one part than another, and that even a careful curetting may fail to bring down fragments showing an advanced condition of disease.

Tumours and operation specimens were examined in ninety-one cases, as follows :—

TABLE III.—EXAMINATION OF TUMOURS AND OPERATION SPECIMENS.

Epithelioma of vulva	2
Adeno-carcinoma of vulva	1
Epithelioma of cervix	8
Adeno-carcinoma of uterus	5
Endothelioma of uterus	1
Fibro-myoma of uterus	26
Mucous polypus	6
Extra-uterine pregnancy	6
Pyosalpinx and salpingitis	8
Dermoid of ovary	3
Cyst of ovary	15
Carcinoma of ovary	2
Endothelioma of ovary	1
Fibroma of ovary	1
Cast from bladder	1
Abortion	1
Fibroma of groin	1
Fistulous tract	2
Adeno-carcinoma of breast	1
Total	91

There were some points of interest in the early history of one of the cases of epithelioma of the vulva. On the first occasion in which the patient presented herself there was a small, hard-based ulcer on the labium. Part of it was excised and examined. No evidence of epithelial infiltration could be found, but relying on the fibrosis and endarteritis which were present, I suggested that the ulcer might be syphilitic in origin. Under iodide treatment it disappeared, but seven months later the patient returned with a larger ulcer. Microscopic examination showed typical squamous cancer. I am at a loss to know whether this was a case of cancer developing in a syphilitic ulcer or if it was malignant from the beginning.

Adeno-carcinoma of the vulva, of which one case occurred, is by no means a common disease. It is supposed to originate in Bartholin's glands. The present tumour was about the size of an egg, occupying one labium. Microscopically it consisted of masses of epithelial cells, separated into groups by thin fibrous bands, the groups in some places being glandular in appearance. A secondary tumour, exactly similar in structure, was removed from the groin.

One of the cases of carcinoma of the uterus presented certain peculiarities. There was a definite patch of ulcerous growth on the wall of the vagina, which naturally attracted notice. A fragment submitted for examination revealed adeno-carcinomatous structure. A curettage fragment from the uterus showing similar pathological changes, the uterus and vagina were removed. The uterus was found to be extensively diseased, and some small nodular subserous fibroids were infiltrated. The case presents, therefore, three points of interest:—(1) The occurrence of adeno-carcinoma in a fibroid uterus; (2) the infiltration of the fibroids by the disease; (3) the implantation of the growth on the vaginal wall. A case exactly similar in the last particular is recorded by Cullen,[a] and the picture he gives exactly represents the condition as we saw it.

In two of the five cases of adeno-carcinoma of the uterus there were fibroids present, whereas in none of the cases of epithelioma of the cervix were there fibroids. This proportion between adeno-carcinoma and fibroid is almost identical with that observed by Mr. Bland-Sutton, who in twenty-three cases of adeno-carcinoma found fibroids present in eight.[a]

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[a] Cancer of the Uterus, London, 1900, p. 415, *et seq.*

The specimen of endothelioma or perithelioma of the uterus showed the organ uniformly enlarged with some fibroid induration. Sections of the endometrium revealed nothing abnormal. Certain small nodules under the peritoneum, however, attracted attention. Microscopic examination of these, and of the serous surface generally, showed masses of fairly large flat cells, arranged in a somewhat columnar manner, and infiltrating the muscle bundles. This condition was quite general over the whole fundus, and can hardly be explained otherwise than as a malignant growth originating in the peritoneum.

Among the 26 fibroids met with, seven had undergone marked secondary changes. In several others there were minor degrees of œdema or slight cystic changes. Of the seven, five had undergone softening—grey necrobiosis, one red degeneration, and one sarcomatous metamorphosis.

Red degeneration is a comparatively rare condition, usually associated with pregnancy. In it the tissue turns a pink or deep red in colour, often presenting a close resemblance to raw beef-steak. The pigment is derived from broken-down blood corpuscles, and the change is probably due to a sudden stoppage of a rich blood-supply. In the present case the red coloration was slight. A much more extreme case was exhibited to the Obstetrical Section last December by Dr. Kinkead and myself.

The case of sarcomatous change in fibroids is of special interest, since the possibility of this condition has often been denied. In the present specimen several fibroids are to be seen. Some of them show no change except ordinary necrobiosis. The larger tumour at the fundus, however, was bright red in colour, and microscopically showed little trace of muscle or fibrous tissue. It consisted of mixed cells. The growth was infiltrating one broad ligament.

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[a] Journal of Gynæcology of Obstetrics of the British Empire, July, 1907.

Only three dermoids came under notice. In none of them was there other structure than skin, with an appended mass of hair and grease.

Two cases of carcinoma of the ovary occurred, differing considerably in type. One specimen (A. H.) is very large, some ten inches in diameter, and semi-solid. Part of it is like an ordinary multilocular ovarian cyst in appearance, but part presents a solid, though soft, mass. It is in this part that the malignancy is best marked; microscopically it consists of masses of irregular epithelial cells with little glandular arrangement.

In the other case (J. K.) the disease is bilateral and the specimens are much smaller, four or five inches in diameter. The tumours are quite solid, and microscopically have a close resemblance to the first case. The occurrence of two cases of carcinoma of the ovary out of eighteen tumours of the ovary is in support of recent researches in the pathology of the organ, and is an interesting comment on the view still held by some teachers on the rarity of the disease. In the new edition of his book on *Tumours* (p. 515), Mr. Bland-Sutton starts the discussion of carcinoma of the ovary with the remark—" Primary cancer of the ovary is a rare disease." This is not our experience at the Rotunda. Moreover, Norris, Leopold, and others have shown, by careful examination of ovarian cysts, that a much larger proportion of them than is generally supposed are, at any rate potentially, malignant.

Endothelioma of Ovary.—These specimens were from a girl of twenty-one, treated some weeks previously in a general hospital for ascites, regarded as due to tubercular peritonitis. The abdomen was opened in the Rotunda Hospital, and the peritoneum was found studded everywhere with small white nodules, not unlike tubercles. The ovaries, which were removed, presented a curious appearance. Each ovary was the site of origin of a papillomatous growth, somewhat resembling a bunch of grapes. The nodules varied in size from that of a pea to that of a grape, and each of them contained in the middle a small cyst-like cavity. Microscopically, the tissue was found to consist of large flat cells, with slight thread-like stroma, the cells being indistinguishable from those of the peritoneum covering the tumours. The nodules scattered over the general peritoneal surface were of exactly similar structure. The tumours were regarded as endotheliomata, originating in the peritoneum. Their resemblance, microscopically, to the case described as "endothelioma of the uterus" was very marked.

TABLE IV.—BACTERIOLOGICAL EXAMINATION OF UTERINE LOCHIA IN TWENTY-FIVE MORBID CASES, SHOWING THE ORGANISMS ISOLATED OR OBSERVED.

Diplococcus A	10
,, B	10
Streptococcus	2
Bacillus coli	5
Unrecognised bacilli	5
,, cocci	2
Saprophytes	2
Negative	5

The lochia were obtained in every case by Döderlein's method. In the laboratory they were examined by smears and by cultures. In ten cases, where organisms were seen in the smear, they failed to grow. In these cases it cannot be claimed that the organism was identified.

The organism "diplococcus A" was described briefly in last year's report. It closely resembles the gonococcus in appearance, and in its tendency to be situated in the cells, but, unlike the gonococcus, it varies in its reaction to Gram's stain. I have had great difficulty in getting it to grow. In the two or three instances, where primary cultures were obtained, attempts at sub-culture entirely failed.

Diplococcus B is probably the pneumococcus.

The absence of all staphylococci from the list is interesting.

One of the cases of streptococcal infection was very severe, ending fatally; the other recovered after an illness of some four weeks' duration.

Pus or other infective material was examined as follows:—

(*a*) Stitch abscess in perineum—*St. aureus.*

(b) Abscess of abdominal wall—*St. aureus*; *Diplococcus pneumoniæ*.

(c) Abscess of abdominal wall—*B. coli*; an unknown coccus.

(d) Abscess of abdominal wall—*St. albus*.

(e) Necrotic tissue from epithelioma of the cervix—*Streptococcus*; *St. aureus*; *St. albus*, &c.

(f) Abdomina' wound—*St. albus*.

g) Vaginal discharge—*Streptococcus*; *Diplococcus pneumoniæ*.

(h) Abdominal wound—*St. albus*.

(i) Vaginal abscess—*St. albus*.

These results may be tabulated as follows:—

TABLE V.—BACTERIOLOGICAL EXAMINATION OF PUS OR OTHER INFECTIVE MATERIAL SHOWING ORGANISMS ISOLATED.

St. aureus	3
St. albus	5
Streptococcus	2
Diplococcus pneumoniæ	2
B. coli	1
Unrecognised	2

One patient suffering from tuberculosis of the bladder was for some weeks under vaccine treatment, controlled by observations of the opsonic index. She reacted excellently to the treatment, her index rising from .6 to 1.2, and after a temporary fall remaining about that figure. At the same time her health improved, and the pain, which had been very troublesome, disappeared. The urine, which at the beginning of treatment contained much pus and plentiful tubercle bacilli, became much cleaner, and we failed to find any tubercle bacilli. Unfortunately, the patient left hospital before anything more than alleviation could have taken place. In several cases an estimation of the opsonic index was made as an aid to diagnosis of tubercular conditions.

During the year the following specimens have been added to, or have been put in preparation for, the Hospital Museum:—

(1) *Adeno-carcinoma of vulva,* described above.

(2) *Endothelioma of uterus,* described above.

(3) *Fibromyoma of uterus*, undergoing sarcomatous degeneration.

(4) *Tubal pregnancy*, showing embryo *in situ*.

(5) *Carcinoma of ovary*.

(6) *Endothelioma of ovary*.

(7) *Sarcoma of vagina* (lent by Dr. Jellett). Fully described to the Academy in 1904 (Proceedings, 1906).

(8) *Red degeneration of fibroid*. A description of this specimen was given to the Obstetric Section of the Academy. December 14, 1906.

ART. VIII.—*Epidemic Cerebro-Spinal Fever: its Earliest History, and its most recent Scientific Investigation*. By R. B. BRYAN, Clk., M.A., M.D., Ch.B., & B.A.O. (UNIV. DUB.).

THIS very peculiar and very interesting form of epidemic disease has recently been again displaying its activity in our Irish metropolis, as well as in other large cities of this and the neighbouring island. Our capital had already been noted for the repeated favours of its visitations; and it is, I believe, to Dublin physicians of the past generation that we owe the best clinical descriptions of epidemic cerebro-spinal fever which have hitherto appeared in the English, or indeed in any, language. The English literature of this fertile subject also first dawned here—at one of the darkest periods, too, of Ireland's troubled history. An Irish provincial—perhaps I had better say suburban—practitioner, Dr. Darby, gave the first definite notice of its appearance in this country (and in the British Islands) in the early part of the year 1846. That year also derived a dismal celebrity in our annals from the fact that its autumn displayed the full development of the ravages of the fell "potato blight," which soon consigned tens of thousands of the inhabitants of the "congested districts" to the horrors of death from complete starvation. And in August of the same year, Dr. Mayne, of Dublin, published his classical description of the symptoms of *cerebro-spinal arachnitis*, as the disease was then named. It was afterwards described by Stokes and others as *malignant purpuric fever*, on account of the eruption which has given it the present current epithet of "spotted fever," and which, I must observe in passing, is by no means a constant feature; so that the adjective was much more appropriately applied to *typhus*, our other great national fever of the famine years. Dr. Lyons, who in that period wrote largely on Fever, sought, with some degree of success, some sensational attention by describing this disease as *black death*, one of the horrors of mediæval pre-sanitation.

In France, where the disease had been well known long before its recognition in Great Britain, it committed great ravages in the series of years from 1837 to 1849, displaying a special predilection for bodies of troops, and more especially for the persons of young conscripts who had recently been drafted. That the disease is an old one is a view which has extreme probability in its favour. Readers of ancient and mediæval literature will all agree that descriptions of special febrile conditions were in those older centuries almost metaphysical in their vagueness. We can hardly recognise a definite description of this disease till we meet with that of Vieusseux and Mathey—of an epidemic which broke out in Geneva in the year 1805. In the following year it appeared in the United States of America, where it prevailed in various localities, as also in Canada, till 1819.

During the period of the great mid-European campaigns of Napoleon's ascendency—between 1805 and 1814—many visitations were recorded, and in various localities, more especially in the fortresses and the gaols.

In most of the cerebro-spinal epidemics of the earlier half of the past century the disease displayed a destructive malignity which was absolutely startling, and almost unprecedented in the annals of the epidemic outbreaks of Western Europe. At Avignon, one prominent physician lost twenty-nine of his first thirty cases; and, on a general average, the mortality of these earlier French epidemics is said to have reached 80 per cent., or a little beyond. The earlier epidemics recorded in Ireland displayed a marked predilection for the persons of boys.

This feature has ever since continued to be a characteristic one, but does not now appear to be nearly so well pronounced as formerly. Unlike the majority of the epidemic eruptive fevers, cerebro-spinal fever does not pursue a well-defined course; and there is, accordingly, no specific limit of duration. In many of the earlier cases of the first Dublin epidemic above referred to, the fatal termination was reached with a thrilling rapidity. Dr. Mayne notes that he had known death to ensue within forty-eight hours, and he refers to cases of reported deaths which had taken place within fifteen hours. I have been told of a case which occurred in the practice of the late Dr. Samuel Gordon of this city, in which a boy, who was a pupil of the Blue-Coat School, sang in the choir at 11 a.m., and died of cerebro-spinal meningitis at 4 30 p.m. on the same day!

Recent epidemics have happily proved far less malignant in their course and destructiveness. Whatever radical grumblers and chronic pessimists may say on the subject of our hygienic,—and various other—deficiencies and drawbacks, the fact is unquestionable that the sanitary surroundings of the average Dublin citizen have improved enormously within the past half-century. And our epidemics are, accordingly, fewer in number, more localised in distribution on their arrival, and far less fatal in their average of recorded results. These unquestionable, and very encouraging, facts cannot reasonably be referred to acclimatisation, as some inveterate critics of all public events would have us to believe. The recent records of our epidemics of this disease have been far more moderate in their proportions of mortality than those of the earlier visitations. Recovery has also far oftener approached completeness. On account of the frequent involvement of the nerves of special sense, many of the recoveries emerged from convalescence with prematurely damaged sight or hearing—or both—in our earlier epidemics; others with sundry varieties of mental lesions, developed in very various degrees; others still, with sundry forms and grades of motor and sensory paralysis. In the recoveries which have often occurred from the milder attacks of our more recent epidemics, those painful sequelæ are not so prominent, or of so frequent occurrence.

The usual symptoms of epidemic cerebro-spinal fever are probably well known to every one who has seen a few well-marked cases. Although varying with a very considerable range of latitude in individual instances, they are extremely typical. One can hardly fancy an intelligent practitioner reading the early descriptions of Drs. Darby and Mayne, and then making a mistake in the diagnosis of even his first case. But the claims of bacteriological pathology have—as a matter of scientific necessity—accorded the foremost and, indeed, the sole crucial position in the diagnosis of this disease to the presence of the *Diplococcus intracellularis meningitidis*. Yet in cases of the fulminating type, which this disease sometimes presents, the certainty of diagnosis thus arrived at is much too slow of attainment to be of great practical use—for a portion of the cerebro-spinal fluid has to be removed by lumbar puncture, the microscopic parasite must be stained, seen by the skilled eye of the practical pathologist, and proved satisfactorily responsive to the test of "culture" experiment. The whole course of the disease in a really malignant case is too short for the complete fulfilment of all these scientific commandments.

The peculiarly patchy distribution of the meningeal inflammation, so unlike what we find in most membranous lesions of similar nature, largely accounts for the variety observable in the signs and symptoms. The strangely distinctive preference for the *vertical* rather than the *basilar* meningeal area is another characteristic fact of the morbid anatomy of this disease, which is of great interest pathologically, as well as of vast importance clinically, while it cannot be satisfactorily explained bacteriologically. The same remark may be applied to the very uncertain appearance and development of the petechial eruption.

As the earliest clinical description of epidemic cerebro-spinal fever in these islands emanated from the Dublin School of Medicine, so, I am happy to be able to add, the most recent important additions to our knowledge of its pathology—and probable progress to a complete therapeutic conquest—have been made by a distinguished graduate of our Dublin University. The discovery of the existence of *opsonins* by Sir Almroth Wright has opened up a new and vast area of pathological research, the culture of which will almost surely yield a return of even more than a hundred-fold. It has already secured the active attention of all scientific pathologists throughout the world; and the *Lancet* of May 4th of this year shows that the Ulster capital has taken a place in the front rank in connection with the study of the recent epidemic of this disease.

Drs. Houston and Rankin have most thoroughly scrutinised the *opsonic index* in sixty-three cases, and state the following conclusions, which are far too full for concentration.

" 1. From the sixth day onwards all the cases examined (with one exception on the seventh day) showed an opsonic index of over 4; several of the cases from the second day onwards also gave an opsonic index of much above 4.

" 2. The opsonic index seems to be a more delicate test of infection than an agglutinative experiment (dilution 1 in 3, incubator temperature, limit 15 minutes); the agglutinative effect was never noticed until the index reached five times the normal, while after that (with one exception, . . .) it was always well marked.

" 3. The combination of this agglutinative effect, and the opsonic determination, will furnish in this disease a specific test of great value in diagnosis. The low opsonic power always found in normal or non-infected serums, so that even when moderately thick emulsions are used two or three cocci were the maximum found in any leucocyte, and the uniform absence of all agglutinative effect in all preparations containing normal serum, forms a striking contrast with the very high opsonic effect found in preparations containing the serum from all cases of the disease on or after the sixth day, and in several cases before this date, such preparations always showing leucocytes packed with cocci, and also dense clumps of cocci not yet ingested. In fact the picture is so characteristic that a diagnosis could in the majority of cases be made by simply mixing some washed corpuscles serum from the patient, and meningococci, and incubating the mixture for a short time without the use of any control. Usually opsonic determinations for purposes of diagnosis require most careful and accurate counts, while in the case of this disease a mere glance at the preparation is usually sufficient.

"4. From the very definite nature of the result obtained it would seem likely that this method will prove of value (*a*) in diagnosticating sporadic cases of the disease; (*b*) in settling the ætiology of posterior basic meningitis in infants; and (*c*) in determining the nature of a doubtful coccus. In the presence of an epidemic it will always be possible by this method to decide whether or not a coccus isolated from a case is the true meningococcus. Several pathologists are of opinion that some strains of the meningococci may be Gram-positive. This test would, we believe, definitely settle the nature of such a coccus. In this epidemic the Gram-positive cocci isolated from the blood, and one from the cerebro-spinal fluid, proved not to be meningococci when tested by this method, although at first sight they closely resembled it.

"5. Two of the main elements on which the process of immunity in this disease depends are the opsonic and agglutinative power of the serum. A therapeutic serum therefore having no opsonic or agglutinative power on the meningococcus could not be expected to have much value as a remedial agent in this disease. Several samples of serum on the market were tested by us and found to have neither opsonic nor agglutinative power. . . ."

That our Belfast *confrères* have, in their very carefully-conducted and well-reasoned experiments, secured a distinct step in advance of our previous knowledge of this disease cannot, I think, be seriously questioned; and their pregnant conclusions are fully laden with suggestions for its scientific diagnosis and treatment in the future.

And, by way of clinical contrast, I will just take the opportunity of referring to the latest German form of treatment which I have seen announced (*Münch. medin. Woch*, March, 1907). An eminent German physician (*Med. Press*, June 19) combines the employment of Bier's induced passive congestion with lumbar puncture frequently repeated. The passive congestion is produced by application of a rubber bandage to the neck—at first made tight enough to produce moderate cyanosis of the face. The bandage is removed when lumbar puncture is about to be performed. The latter procedure is adopted whenever high fever exists, and there are signs of elevation of intracranial pressure. Those in favour of the adoption of passive congestion argue the advantage to be expected from the greater concentration of bacteriocidal substances at the seat of the inflammatory mischief; and the increased exudation of lymph, which brings a greater number of leucocytes to the scene of phagocytic combat. The effects, combined with the lumbar puncture, constitute a flushing of the cerebro-spinal sub-arachnoid space. The reasoning seems fairly sound in scientific theory; I venture to express my doubts regarding the general adoption of the practice—especially in Ireland.

Let us take a concluding bird's-eye view of Sir Almroth Wright's epoch-making discovery; of the scientific status of the *opsonins* (and their very significant index), and the possible genesis of the new item of scientific nomenclature which has already secured a cosmopolitan celebrity.

The phagocytic theory of immunity promulgated by Metchnikoff, which has now for a considerable number of years occupied so prominent a position in the literature of scientific pathology, and played so considerable a part in the practice (as well as in the theory) of clinical medicine, attributed no special functional importance to the blood serum in this connection. The fruitful researches of our distinguished fellow-countryman may be said to have culminated in the success of a single experiment which demonstrated the all-important collateral activity of the blood plasma in the process of phagocytosis. For the carrying out of this experiment three essential factors must be separately prepared:—(1) Leucocytes washed free from all traces of plasma; (2) an emulsion of the micro-organism whose faculties are to be tested; and (3) a little of the blood serum of the individual whose phagocytic power is to be investigated. If equal quantities of factors

(1) and (2) be incubated for fifteen minutes in a capillary pipette at 36° C. no phagocytosis will be found to have taken place; if the experiment be repeated, with the modification of the presence of an equal quantity of serum taken from a healthy individual, phagocytosis will surely occur. This proves that the serum contains *a something* essential to the production of phagocytosis. This essential substance, or substances, represents the group of factors to which Professor Wright has given the name of *opsonins*. The proportional amount of these factors which an individual holds in readiness for action on a particular micro-organism may be calculated to a degree of mathematical accuracy by counting the number of bacteria ingested by a certain number of leucocytes, when mixed with some of the serum taken from that individual, and comparing this number with the phagocyte count obtained in a corresponding experiment with the serum of a normal individual.

The epoch-making discovery of the presence of opsonins, and the measurement of the opsonic index, has, as might have been anticipated, called forth a vast amount of comment and criticism. The latter is largely favourable, but, of course, not invariably so. And not only the discovery of these very important agents, but their baptismal nomenclature, has given some anxious trouble to the pathological etymologist; the criticism has even far overflowed the banks of the current of medical orthodoxy, for a correspondent of the *British Homœopathic Review* for April of this year called to order the contributor to Wright's *Medical Annual* for 1907—*in re* the derivation of the new scientific word *opsonins*. The homœopathic critic proceeds to observe: "We are told that these substances are called opsonins from the Greek opsono—'I cook for table,' I prepare pabulum for.

"I trust it will not be thought pedantic on my part if I point out that there is no such verb or word as 'opsono' in Greek, and that the name appropriately given to these substances by Professor Wright is from *ὄψον*, meaning (1) boiled meats; (2) anything eaten with bread to give it a relish; (3) sauce, flavouring, or rich food.

"The word *ὄψον* (opson) is a substantive derived from the verb *ἕψω* (hepso) 'to boil'; when used of metals, to smelt, to refine. Whereas this verb is found no further back in old Greek literature than Pindar's Odes, the substantive *ὄψον* is used in the Iliad and in the Odyssey of Homer."

And this learned critical volunteer is in his turn ably re-criticised by the Editor of the *St. Louis Medical Review* (May 4, 1907)—the classical fame of opsonins having already overshadowed both hemispheres:—"We trust that it will not be thought pedantic (or even ill-natured) on our part if we point out that, while it is true that there is no such word as *opsono* in Greek, there is such a verb as *ὀψωνέω* (*opsoneo*), which means to buy or provide victuals; in other words, to cater for, and, by way of example, we may cite Xenophon's *Memorabilia of Socrates*, iii. 14, where we read: *Καὶ ἐπεὶ οὐδὲν πλέον εἶχον τῶν μικρὸν φερομένων, ἐπαύοντο πολλοῦ ὀψωνοῦντες*, which, being interpreted in the light of the context, means that when Socrates, finding that those who were well fixed brought to the feasts lots of good things for themselves and ignored those who could not afford to bring much, he put the latter up to the dodge of handing round their windfall apples, so that those who were better off could not without ill grace decline to partake, and equally could not avoid sharing their own hot-house pines in like manner with the others. Then, continues Xenophon in the text, 'when these (hogs) found that they got no more (out of what they brought) than those who brought only a little, they "let up" on purveying an abundance'—*ἐπαύοντο πολλοῦ ὀψωνοῦυντες*.

"There is a further word, *ὀψώνιον* (Latin *obsonium*), which signifies provisions or supplies.

"We do not profess to know what word Sir Almroth Wright had in view when he coined the term *opsonins*, but if he is a classical scholar—or if, not being such, he consulted one—it seems to us more likely that *ὀψωνέω* or *ὀψώνιον* rather than *ὄψον* was the source of his inspiration.

"As for the fact that *ὄψον* is derived from *ἕψω*, to boil, that the latter (the verb) only traces back to Pindar, while the former (the substantive) is found in the Iliad and the Odyssey of Homer, we are compelled, with equal relevance, to insist that the opsonins do not use avoirdupois weight (which is only French and therefore modern) in their culinary operations, but Troy."[1]

The somewhat delicate distinction in the spelling of the verb and noun-substantive (contained without criticism in the quotation from our St. Louis contemporary) is illustrated in a confusing fashion in all the editions of Juvenal which I have had an opportunity of examining. In one of his emphatic references to the extraordinary appreciation of the delicacies of a fish-diet displayed by the contemporary epicures of decadent Rome, the great satirist has the following lines:—

> "Obstitit intranti miratrix turba parumper.
> Ut cessit: facili patuerunt cardine valvae.
> Exclusi spectant admissa *opsonia* patres."—*Sat.* IV., 62-4.

And in another reference to the scientific gluttony of the time:—

> ". . . Adeo nulla uncia nobis
> Est eboris, nec tessellae, nec calculus ex hac
> Materia: quin ipsa manubria cultellorum
> Ossea. Non tamen his ulla unquam *obsonia* fiunt
> Rancidula, autideo pejor gallina secatur."—*Sat.* XI., 131-5.

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[1] "Is this one of Liddell's derivatives? We recall an old schoolboy rhyme *anent* Liddell and Scott's Greek Lexicon to the following effect:

> "This is a book by Liddell and Scott;
> Part of its good and part of it's not.
> The part that is good was written by Scott;
> The part that was written by Liddell is not."

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

◆

The Evolution of Life. By H. CHARLTON BASTIAN, M.A., M.D., F.R.S. London: Methuen & Co. 1907. Pp. 319.

IN the gradual evolution of matter through atoms, molecules and compounds it is, as Dr. Bastian says, not only probable, but necessary, "that the particular combinations giving rise to living matter when the right time came would have occurred in multitudinous regions over the earth's surface, and would have recurred again and again as long as the conditions remained favourable.

The question, however, is what occurs now—Is living matter at the present time formed *de novo* or is it invariably derived from pre-existent living matter ? The great mass of scientific opinion is in favour of the latter view, and the doctrine *omne vivum ex vivo* is the almost universally held dogma of the schools. But for many years Dr. Bastian has held the contrary opinion, and has maintained an up-hill fight in support of the view that such combinations of matter are still continually forming as give rise to living matter—in other words, that living matter is continually being formed from matter which is not living. This is the origin of living things by archebiosis, and it is to the support of this doctrine that the volume before us is devoted.

A great part of the work is controversial. The author complains, and we think with reason, that he has not always received fair play from his opponents; that his statements have not been answered; and that his experiments have not been accurately repeated. He certainly appears to have been treated neither with courtesy nor fairness by the Commission appointed by the French Academy to judge between him and M. Pasteur.

It would lead us too far if we were to follow Dr. Bastian through the details of his experiments. The success of these experiments depends largely on minute attention to details, and it would not be fair to omit these, the description of which would exceed our limits. The work, however, is one of great interest and fascination, and everyone must admit the honesty of purpose of the writer. As to the facts, a number of experiments were made before the late Sir J. Burdon-Sanderson, whose scientific acumen and fairness of mind are so well known. This gentleman vouches for the accuracy of Dr. Bastian's statements, but prudently gives no opinion as to the explanation of the facts. In these experiments bacteria appeared in infusions of turnip and hay, which had been boiled for a considerable time, and sealed up in flasks while boiling, with exclusion of air.

In his present work Dr. Bastian gives very numerous experiments made to determine the temperature at which life is impossible—working not only with bacteria, micrococci, &c., but with spores, some of which had been dried for five years. He notices the observations which have been made on the very high temperatures which can be sustained by the so-called thermophilic bacteria, although there is no likelihood of these organisms complicating his experiments. He gives then experiments made with urine and other organic solutions in which, after every precaution was taken to ensure the certain death of pre-existing life of any kind, organisms reappeared in the hermetically closed vessels. He places great importance on the right degree of acidity of the fluids used, and shows that, in the case of urine, a slight excess or deficiency of alkali makes the experiment fail. It is very necessary to draw a distinction between *nourishing* fluids, or those in which bacteria will grow if they are introduced from without, and *generating* fluids, in which they originate *de novo* from dead matter. Pasteur's fluid is an example of the former. Turnip infusion and urine examples of the latter.

What are called final decisive experiments are given in the fifth part of the book. These are made with inorganic solutions, into many of which silicon enters and no carbon is present. In many of these experiments living organisms are apparently produced, and photographs of them are given.

In the final chapter Dr. Bastian discusses the relation of his work to modern bacteriology. In this he questions the view that bacterial diseases are always derived from infection, and, while he does not in the least question the good which has been done by modern hygiene, sanatoriums and other efforts to minimise the risk of contagion, he thinks "that contagion is as much over-rated as genesis is under-rated, and that our notions concerning prevention must not be too much centered upon the mere elimination of contagion."

So long as Dr. Bastian's conclusions are not confirmed by a careful repetition of his experiments the matters dealt with must remain doubtful, but we think that such an examination is urgently needed. Many of the experiments call for explanation if the views of Dr. Bastian are not admitted, and it appears to us that it could be seen without much difficulty whether such an explanation can be afforded. In the meanwhile, we would cordially recommend the book to the notice of all our readers.

A Text-book of Obstetrics. By Barton Cooke Hirst, M.D.; Professor of Obstetrics in the University of Pennsylvania: Gynæcologist to the Howard Hospital, &c. Fifth Edition. Revised and Enlarged. With 767 Illustrations, 40 of them in colours. London: W. B. Saunders. 1906. Pp. 915.

Hirst's text-book on obstetrics has passed through so many editions that it seems almost superfluous to do more than note the appearance of still another. From a careful examination of the present edition we think that the book has been kept thoroughly up-to-date, and that it forms a very excellent companion volume to the author's Text-book on the Diseases of Women.

In some places we should like to see further revision and alteration. Of these, the principal are to be found in the sections dealing with accidental hæmorrhage, which are so short as to be entirely out of proportion to the rest of the book, and in the sections dealing with the treatment of mammary abscess. So far as our own experience goes we must condemn absolutely the practice of making multiple incisions in the breast so as to open "every pocket of pus and every sinus." We quite agree that every pocket of pus and every sinus must be opened, but not from the outside. The work can be as satisfactorily done through a single incision, provided that it is followed, not by the introduction of drainage tubes, but by the insertion of a firm tampon of iodoform gauze. These criticisms are, however, only *en passant*. As a whole the book is excellent.

The Principles of Clinical Pathology: A Text-book for Students and Physicians. By DR. RUDOLPH KREHL, Ordinary Professor and Director of the Medical Clinic in Strasburg. Translation from the Third German Edition by A. W. HEWLETT, M.D., Instructor in Clinical Medicine at the Cooper Medical College, San Francisco. Philadelphia and London: Lippincott. Pp. 504.

THIS is a valuable book, and will be found generally useful. Too often the subjects of pathology and of morbid anatomy are not kept distinct, and works purporting to treat of the former are largely concerned with the latter. Disturbance of structure and disturbance of function often go hand in hand; yet in many cases disturbance of function must be considered apart from any change of structure. This fact is proved by Dr. Krehl's work; it treats of pathology pure and simple, and discusses the perversions of function of the various organs and systems of the human body.

The first chapter treats of the heart, and runs to nearly ninety pages. In it we find an admirable account of the causes and significance of such alterations as hypertrophy and dilatation, of the effects on the heart and circulation, of the various valvular lesions, of the alterations in the cardiac rhythm; in fact we have not elsewhere met with so clear and complete account of the pathology of the heart. It is interesting to note with reference to the hypertrophy found in Bright's disease that Krehl considers that the hypertrophy affects the right as well as the left ventricle; he regards it as certain that it is caused by increased blood pressure, but he considers that we are entirely ignorant of the cause of this increased pressure. His conclusions appear to be eminently cautious and sane. When any matter is still uncertain and not capable of explanation he does not hesitate to say so.

As well as chapters on the other systems of the body—respiration, digestion, the secretions—there are chapters on gout, diabetes, fever, and infection which, perhaps, show the limitations of our knowledge quite as clearly as its extent. But, after all, this is far better than any enthusiastic support of ill-founded theories.

This book we regard as valuable, instructive and reliable, and we warmly recommend it.

Green's Encyclopedia and Dictionary of Medicine and Surgery. Volume V. Inulin to Lumbar Puncture. Edinburgh and London: William Green & Sons. 8vo. 1907. Pp. xi + 536.

THE fifth volume contains 908 subject-headings, and carries the reader from "Inulin" to "Lumbar Puncture." With it, we are told, the first half of the work is completed. There are forty-seven articles in the volume of more than 1,000 words. The outstanding monograph is that on "Labour." It contains seventeen sub-divisions, and is the joint work of some twelve or thirteen authors, including our fellow countryman, Dr. Henry Jellett. The larynx and its diseases are treated in eight sections covering 54 pages of print. A third notable article is that on diseases of the liver, other than tropical disorders of the organ. The author is Dr. H. D. Rolleston.

The work maintains its high character in this volume.

A Manual of Normal Histology and Organography. By CHARLES HILL, M.D.; Assistant Professor of Histology at the North-Western University Medical School, Chicago. Philadelphia and London: W. B. Saunders Co. 1906.

THIS is a very good elementary book. It is intended for the use of students taking out a first course in histology. In addition to the actual description of the minute anatomy of the various organs and tissues of the body, a brief account is given of the more important methods of embedding and staining, such as would explain to a student the various phases that his section has gone through before he receives it for mounting and examination. The illustrations are numerous, and should act as guides in interpreting histological appearances, but they are not up to the usual standard of American text-books, nor is colour employed as freely as it might be. In the text, the author has endeavoured to give an insight into the structure of organs by a brief allusion to their embryonic history. This has succeeded fairly well, and should prove stimulating to the more thoughtful type of student.

We recommend the work to those for whom it is intended.

Tics and their Treatment. By HENRY MEIGE and E. FEINDEL. With a Preface by PROFESSOR BRISSAUD. Translated and Edited, with a Critical Appendix. By S. A. K. WILSON, M.A., M.B., B.Sc.; Resident Medical Officer, National Hospital for the Paralysed and Epileptic, Queen Square, London. London: Sidney Appleton. 1907. 8vo. Pp. xxii + 386.

As the reader is informed in the *Preface*, "the authors of this volume have been resolute in their reference of the pathogeny of tic to a mental process . . . examination always reveals insufficiency of inhibition, to which are due the inception and the persistence of many 'bad habits.' We can thus appreciate the *rôle* of habit in the evolution of tics, and recognise the analogy they offer to all functional acts. A tic is frequently nought else than the ill-timed and inapposite execution of some function." With the views expressed in these sentences we feel quite disposed to express our concurrence. They are, of course, those of Professor Brissaud—as rendered by Dr. Wilson. But we may claim the least exacting of the critics' privileges in hesitating to seal our full assent in corroboration of the hypothetical opinions expressed in the following:—"We may even conceive a sort of functional tic centre, formed by nerve elements corresponding to the functional grouping of the muscles involved in the tic. In advanced cases we may imagine some sort of hypertrophy of this functional centre, which may be reduced by suppression of function—that is to say, by certain methods of immobilisation." This eminent neurologist must, however, be allowed to give the scientific aspect of the term its utmost connotative value when he tells us that "tic is not merely a neurosis, but a psychoneurosis, or, to be more exact, a psychomotor encephalopathy." We have had more than one feminine subject of "nerves" on our visiting list, who most assuredly would have paid down a guinea fee, with a special unction, for the gratification of ascertaining that she was the actual possessor of an item of personal property furnished with a title of dignity so extremely exceptional!

The text proper of the volume is divided into nineteen chapters—followed by an *Appendix*, which embraces the additional theory and practice of Meige's more recent monograph on the subject of *Tics*; an excellent *Bibliography*; an "Index of Names"; and an "Index of Subjects."

Every manner of "tic" receives the best consideration of our authors—from "Facial Tics" down to "Walking and Leaping Tics;" "Spitting, Swallowing and Vomiting Tics—Tics of Eructation and Wind-Sucking;" "Tics of Respiration—Snoring, Snuffing, Blowing, Whistling, Coughing, Sobbing and Hiccoughing Tics." Chapter X. deals with "Tics of Speech"—these include "Echolalia" and "Coprolalia." Chapter XI. introduces the reader to the "Disease of Gelles de la Tourette," and the "Variable Chorea of Brissaud." Chapter XVI. deals with diagnosis, and herein, besides a number of other interesting items, we find a group of "Tics and Choreas" which includes: *Sydenham's Chorea, Huntingdon's Chorea, Hysterical Chorea, Electric Chorea, Bergeron's Chorea, Dubine's Chorea*, and the *Fibrillary Chorea of Morvan.* Chapters XVII., XVIII. and XIX. deal respectively with "Prognosis," "The Treatment of Tics," and "Treatment by Re-education." Our authors' material is, accordingly, both varied and interesting in its associations; its problems are manifold, and their solutions always fascinating, if not always satisfactory. But they have dealt with its multiplex problems with the confident reliability of past-mastership, and we gladly recommend to the attention of every inquiring reader their very valuable contributions to the elucidation of an intricate department of pathological theory and of clinical practice.

The Röntgen Rays in Medical Work. By DAVID WALSH, M.D. Edin.; Senior Physician, Western Skin Hospital, London, W.; Hon. Physician and Senior Physician to the Skin Department, Kensington General Hospital; Late Hon. Secretary, Röntgen Society, London. Fourth Edition. London: Baillière, Tindall & Cox. 1907. Pp. xviii + 433. 172 Illustrations.

THE present or fourth edition of this popular work on the medical application of the Röntgen rays has been enlarged and brought up to date. It was last published in 1902. We find that it contains fifty-five additional figures and photographs and 117 more pages than the third edition. Some of the new X-ray photographs are particularly interesting and well reproduced, especially those showing the changes in bone structure, due to the atrophy of disuse, &c.

The general arrangement of the work has not been much altered. Dr. H. Lewis Jones, F.R.C.P., London Medical Officer in charge of the Electrical Department, St. Bartholomew's Hospital, is again responsible for Part I.—"The Electrical Apparatus." This section of the manual has been greatly amplified, especially the chapters dealing with the vacuum tube, the various kinds of interrupters, and the different methods of obtaining electric currents. But we notice that the orthodiagraph and its principle have not been discussed in connection with apparatus or elsewhere.

Part II.—"Medical and Surgical Applications"—has been, as before, written by the author, Dr. Walsh. The most important change here is that the extensive appendix in the last edition has been incorporated in the main body of the work. This will be found a more convenient arrangement. There are several fresh references to recent publications of various authorities. A more detailed account is also given of practical points in X-ray interpretation and technique.

In conclusion, we can recommend this book to all interested in X-ray work. It is not only a useful guide to those engaged in this branch of medical science, but it also comprises an instructive Atlas of Röntgen ray photographs.

Atlas and Text-book of Human Anatomy. By JOHANNES SABOTTA. Edited, with additions, by J. PLAYFAIR M'MURRICH. Vol. II. Philadelphia and London: W. B. Saunders Company. 1906.

THIS, the second volume of the work, deals with the digestive, the respiratory and the urino-genital systems, and also with the heart.

The excellent plates and text figures illustrate in a very perfect manner what is regarded as the normal anatomy of the parts dealt with, for the figures are admittedly somewhat diagrammatic, and in each case abnormal or irregular structures are omitted or indicated in their more usual positions. Many of the illustrations are extremely beautiful and instructive, among these are several plates depicting the disposition of the peritoneum and the positions of the abdominal viscera. The drawing and the colouring of these plates could scarcely be improved.

The text which accompanies the plates is carefully arranged, clear and concise. It contains numerous smaller and very useful illustrations, including an excellent series of diagrams showing the development of the alimentary canal and of the peritoneal folds connected with it.

Many of the illustrations show that the viscera have been carefully hardened before dissection, and the actual shapes of the organs are extremely well shown. In the case of the spleen, however, the description in the text and the illustrations do not correspond to the more usual forms of the organ met with. The general outline of the spleen, as shown in the illustrations, resembles somewhat the older models of His, but the hilum is described and illustrated as being situated on an elevation separating the gastric from the renal surface.

The second volume of the Atlas fulfils the expectations aroused by the appearance of the first volume, and it will certainly prove useful to medical practitioners and students alike.

A Manual of Anatomy. By A. M. BUCHANAN, M.A., M.D., C.M., F.R.P.S. Glas. Vol. II. London: Baillière, Tindall & Cox. 1907. Pp. xv + 950.

THE second volume of Professor Buchanan's "Manual of Anatomy" completes the work, the first part of which appeared last autumn. The book supplies, in a most attractive manner, all the information required by the ordinary medical student preparing for a pass examination. The various parts of the body are described in the order in which they are most usually met with and dissected, and guides as to the best way of displaying the various structures are given at the end of each section of the work. Experience obtained during the last winter session has shown that Volume I. of Buchanan's "Anatomy" is a good book from a student's point of view, and a survey of Volume II. leads one to believe that it will prove equally satisfactory as a dissecting-room handbook. It is extremely easy to find the information which one desires, as the arrangement of the matter has been carefully thought out, and the employment of different kinds of type facilitates rapid reference to the various sub-sections of the work.

The inclusion of a detailed description of the bones, of short accounts of the development of the parts and organs described, and of short notes of their microscopic structure, distinguishes Professor Buchanan's book from most other manuals of its size. The embryological and histological notes are necessarily very short and didactic, nevertheless they add an attraction to the book, as do also the appendix and glossary which are printed at the end of Volume II.

The work, as a whole, is one which we can with confidence recommend to students.

PART III.

MEDICAL MISCELLANY.

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Reports, Transactions, and Scientific Intelligence.

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ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. Magee Finny, M.D., F.R.C.P.I.
General Secretary—James Craig, M.D., F.R.C.P.I.

SECTION OF STATE MEDICINE.

President—F. C. Martley, M.D., F.R.C.P.I.
Sectional Secretary—W. A. Winter, M.D., F.R.C.P.I.

Friday, April 19, 1907.

The President in the Chair.

The State and Syphilis.

Dr. Seymour Stritch read a paper on the above subject, and discussed the matter from its financial, vital, hygienic and legislative aspects. He endeavoured to show that the time had now come for an active crusade to be formulated by the Government and people against syphilis. He adduced figures to prove that the cost to the nation of venereal diseases in the Army, Navy and Government Departments amount annually to no less a sum than £3,000,000, and that making allowances for superannuations and for sick leave occasioned indirectly through these diseases, though not appearing in the returns as such, he personally considers the more accurate estimate of this loss would be £7,000,000. The loss to the nation from death and disablement should be considered, not only from the point of view of syphilis alone, but also from all those scrofulous and tubercular diseases which may be traceable from its origin (cancer of the tongue, throat, leucoplasia, &c.). The hygiene of syphilis might be dealt with from the basis of a trihedron supporting the principle of morality, sociality and legislation. The first of these was, he believed, more within the province of the Church than in that of medicine, and, therefore, he resigned it into the hands of the Church. Socially, the disease might be combated by improving the environment of young men in business and in the services. Domestically, an endeavour to make the home attractions more pleasant than the seductions of the city should be the anxious endeavour of parents. By fathers retaining the confidences of their sons they could observe the bent of their minds, and by tactful insinuations create by suggestion the necessary antidote. The *morale* of the nursery should not be neglected owing to morbid curiosity of young nurses. Circumcision he believed worthy of being adopted universally. Boys should be encouraged to acknowledge any slip to their fathers. Lectures should be given in schools and ambulance classes on the dangers of venereal disease. He considered the question of legislation, as including a review of the Contagious Diseases Acts, could only be studied, like certain plays, in one's own room. He believed the Acts fulfilled their purpose, but for the general good they should not be applied piecemeal or after a patchwork fashion to isolated areas, but rather throughout the Empire. He believed that, given free dispensaries for men in each quarter of a city, the notification of the disease and punishment of those to whom its spread was traced, together with the compulsory detention and segregation of prostitutes whilst in an infectious condition, and also if the General Medical Council included dermatology and syphilis among the subjects of which evidence of special study was required during the curriculum of students—given these postulates, he believed that syphilis would become of but sporadic importance.

Colonel Butt, R.A.M.C., said his experience of the disease had been limited to the Army, but he had often thought that the medical profession did not look at the matter properly, and that they, in common with the general public, did not look facts in the face and recognise that, notwithstanding all sorts of moral and educational influences, things were much the same as they had been in the past. Legislation was required for a section of the community who would not submit themselves to self-control. The State would be guided in the matter largely by the opinion of the medical profession, and yet the whole subject bristled with controversy largely as the result of ignorance. He was convinced that no advance could be made towards stamping out the scourge until every member of the profession took a whole-hearted interest in it. His own experience of his last three years in India had led him to the conviction that the disease could be stamped out. During that period, in a garrison of one thousand men, he had not one case of syphilis, although there were many prostitutes living on the confines of the garrison, and none of these contracted syphilis, although the number of syphilitics in the garrison never fell below one hundred. He admitted that the accomplishment of this was made easy for him by the magistrates, commanding officers, and his brother medical officers working with the one desire of stamping out the disease. They induced the soldiers to believe that they could benefit them by submitting to treatment. There was no stigma attached to women who suffered from venereal diseases going into the cantonment general hospitals, and the native women attendants were got to explain to the women the benefits of treatment. The result was, he thought, strong presumptive evidence in support of his contention, that so long as local manifestations of the disease had been removed and the treatment was continued the disease could not be communicated. It had occurred to him that in order to get to influence the prostitutes to submit to treatment use might be made of the Salvation Army. That society had done immense good in other directions, and if it were shown that the profession was anxious to combat the disease on humanitarian grounds he believed the society would assist them. He believed that by treating syphilis patients as sufferers rather than as offenders they could be got to submit to treatment, and that thus they would go a long way towards controlling what he considered a preventable disease.

Dr. Henry FitzGibbon said the difficulty which had always existed in dealing with patients in the Lock Hospital had been the absence of controlling power to get the patients to remain under treatment. The tendency with the patients was to think that they were cured as soon as the disease was out of sight. Power was required to keep prostitutes in hospital as long as there was active syphilis present, and to keep them under observation and treatment as extern patients afterwards. There was also a difficulty in connection with young men who had not the means to pay for treatment, and who had no encouragement to go to general hospitals.

Major Brown, R.A.M.C., said that although he had never been able to connect syphilis and tuberculosis, as suggested by Dr. Stritch, he had always found that when syphilis was contracted by a patient with tuberculosis he went from bad to worse, no matter what the treatment was, unless he was got early. As regards prevention, keeping boys at home was an excellent method, if it could be done; but a better plan was to protect them when they went abroad by legislating for them, and legislation meant bringing back the Contagious Diseases Act. The majority of those who indulged in that particular vice were not open to moral persuasion. Syphilis, of course, could be contracted in many ways, and there should be some place where it could be cured. Women, however, who practised as prostitutes were not open to moral persuasion, and the only way was to compel them to remain in hospital or to report to a doctor until they could be certified as free from the disease. Their efforts to stamp out the disease in the army did not seem to have had much effect. In Dublin, in 1906, the constantly sick from syphilis were 2.93 per 1,000, while in 1866 it was 1.72.

Dr. Pugin Meldon said that one of the first difficulties in curtailing syphilis was the difficulty of diagnosticating it early. He thought, however, that that would be only a temporary difficulty, and that the bacteriologist would aid them in telling the patients definitely whether they were suffering from syphilis or not. A further difficulty was that of keeping prostitutes in the hospital. They went in readily enough as long as they were sore, but they went out in a short time, and became infectious. This was the case with the very large percentage of patients, who were also heavy drinkers. Soliciting in the streets should, he considered, be made illegal, and the punishment should depend on whether they were suffering from venereal disease or not. If suffering from disease, they should be confined in a Lock ward or hospital, or in special prison wards, until cured, or allowed out on a ticket-of-leave principle. He considered also that any man who held connection with another individual while suffering from syphilis ought to be severely punished. The great difficulty in the way of legislative measures was the opinion of the public that the more syphilis was stamped out the more prostitution there would be. Their business, however, as medical men was to check disease in every form. The presentation of the financial side of the question, as mentioned by Dr. Stritch, might smooth over the obstacle of public opinion. Seven million pounds lost to the nation meant two pence or three pence off the income tax. That was a fact which the general public would appreciate.

Dr. Kirkpatrick said the question of State interference was as old as history. So far back as A.D. 1162 Parliament interfered for the regulation of brothels. If the public knew more of the history of the disease and the efforts which had been made to stamp it out the work of the medical profession at present would be much lessened. There seemed to be a general idea among the public that there was no regulation for State interference with venereal disease in Dublin. That was a mistake. Under the Act of Parliament, 5 Vict., c. 24, the police dealt very severely with prostitutes and soliciting, and in the Act, 48 & 49 Vict., there were very stringent regulations for the suppression of brothels. He had received from the Commissioner of Police a table showing the number of women proceeded against during the last five years, 601 being dealt with in 1906. During the same period twenty brothels had been suppressed in each year. This afforded them a starting-ground for an active crusade against the disease. It was not always, as was urged, a merited disease, and he had only recently seen the case of a woman who had been infected by her husband, as the result of his contracting the disease, during her pregnancy, and she had infected her child. The morbidity and mortality of the disease justified them in urging the State to interfere in the matter just as it was interfering in diseases that cost the State an insignificant number of lives compared with the loss of life due to syphilis. The sentiment of the country was against the official registration of prostitutes, and he would rather follow the suggestion that the laws at present in force should be used against solicitation, and a man who could be proved to have infected a woman with syphilis should be liable to similar punishment.

Colonel Burtchaell said he had been in several American cities where prostitution was rampant, although the police arrangements absolutely prevented soliciting. If the prostitutes did not find the men, the men would find the prostitutes. The State legislated for zymotic diseases, but they were diseases of innocent people. Syphilis, however, was due to a voluntary act.

If legislation was enacted it should be equally severe on the man and the woman, and he thought there should be some restriction on the marriage of syphilitics.

Dr. Winter said that the debate showed that the profession were not of one mind. Their policy should go along three main lines—(1) They should educate the people, and to do so they must first educate themselves; then (2) they could proceed to agitate for State interference; having agitated sufficiently they could then (3) proceed to try to get the State to act. In the prevention of the disease there was the difficulty that young men could not get away from their employment continuously to attend hospital, and it occurred to him that a possible aid would be for some of the hospitals to start an evening dispensary for men. He believed they would remain under treatment if allowed. He did not think the police could be very active against soliciting.

Mr. Stritch replied.

THE THERAPY OF CYSTITIS.

In an article on "The Therapy of Acute and Chronic Cystitis," in the *Deutsche med. Wochenschrift*, No. 49, Prof. Dr. Ehrmann, Vienna, speaks in the first part about gonococcic cystitis, whilst in the latter he deals with ordinary acute and chronic cystitis. For the former he advises not directly to inject antigonorrhoica into the bladder, as they often increase the inflammation, but first to apply such remedies as act antiseptically on the microbes. After the cessation of the irritation the ordinary local treatment should set in, however, first in the form of douches—*i.e.*, 2 to 3 per cent. sol. of boric acid; small quantities at first, which by and by are increased to 25 to 50 grms—*i.e.*, 1 to 2 ozs. If such injected quantities can be borne without undue irritation stronger disinfecting products can be resorted to, chiefly of the nature of silver preparations. Other forms of acute cystitis are treated similarly. Urotropin the writer found to be especially useful in ammoniacal cystitis. In chronic cases Prof. Ehrmann considers he can dispense with all internal remedies except urotropin, but recommends an additional local treatment as well.—*The Therapist*, July 15, 1907.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by SIR JOHN MOORE.

VITAL STATISTICS

For four weeks ending Saturday, August 10, 1907.

IRELAND.

THE average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending August 10, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 15.5 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, August 10, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality:—

TOWNS, &c.	Week ending				Average Rate for 4 weeks	TOWNS, &c	Week ending				Average Rate for 4 weeks
	July 20	July 27	Aug. 3	Aug. 10			July 20	July 27	Aug. 3	Aug. 10	
22 Town Districts	18.4	18.0	16.5	15.5	17.1	Lisburn -	18.2	36.4	9.1	9.1	18.2
Armagh -	6.9	13.7	—	13.7	8.6	Londonderry	7.4	17.2	14.7	19.6	14.7
Ballymena	9.6	23.9	14.4	14.4	15.6	Lurgan -	13.3	17.7	13.3	22.1	16.6
Belfast -	19.2	16.5	16.2	14.6	16.6	Newry -	25.2	12.6	8.4	8.4	13.7
Clonmel -	—	5.1	20.5	5.1	7.7	Newtownards	28.6	5.7	5.7	34.3	18.6
Cork -	9.6	16.4	18.5	19.2	15.9	Portadown	10.3	25.8	10.3	10.3	14.2
Drogheda -	8.2	16.3	12.3	24.5	15.3	Queenstown	33.0	6.6	6.6	6.6	13.2
Dublin (Reg. Area) -	21.5	21.2	18.0	15.7	19.1	Sligo -	24.0	9.6	4.8	9.6	12.0
Dundalk -	16.0	8.0	12.0	8.0	11.0	Tralee -	5.3	—	15.9	31.7	13.2
Galway -	—	19.4	15.5	11.7	11.7	Waterford	25.3	23.4	23.4	17.5	22.4
Kilkenny -	29.5	4.9	9.8	9.8	13.5	Wexford -	14.0	23.3	23.3	23.3	21.0
Limerick -	20.5	15.0	19.1	10.9	16.4						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, August 10, 1907, were equal to an annual rate of 1.2 per 1,000—the rates varying from 0.0 in fifteen of the districts to 5.7 in Newtownards, in which district there was one death from diarrhœa. Among the 104 deaths from all causes registered in Belfast are 4 from measles, one from diphtheria, 2 from diarrhœal disease, and 3 from cerebro-spinal fever. The 8 deaths from all causes in Limerick include one from whooping-cough. In each of the districts of Londonderry, Drogheda, and Tralee there was one death from diarrhœa.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, August 10, 1907, amounted to 170—85 boys and 85 girls; and the deaths to 118—50 males and 68 females.

DEATHS.

The deaths registered represent an annual rate of mortality of 15.7 in every 1,000 of the population. There were no deaths registered of persons admitted into public institutions from localities outside the area. During the thirty-two weeks ending with Saturday, August 10, the death-rate averaged 26.0, and was 0.3 above the mean rate for the corresponding portions of the ten years, 1897-1906.

The deaths registered (118) included 5 from measles, one from whooping-cough, one from diphtheria, one from enteric fever, and 5 from diarrhœal diseases. In each of the three weeks preceding deaths from measles were 0, 3, and 6; deaths from whooping-cough were 4, 4, and 4; deaths from diphtheria were 0, 0, and 2; deaths from enteric fever were 0, one, and 0; and deaths from diarrhœal diseases were 0, 4, and 3.

There were 3 deaths from broncho-pneumonia and 5 deaths from *pneumonia* (not defined).

The total deaths from all forms of tuberculous disease was 30, and included 4 deaths from tubercular phthisis, 11 deaths returned as from *phthisis*, 6 deaths from tubercular meningitis, 2 deaths from tubercular peritonitis, one death from *tabes mesenterica*, and 6 deaths from other forms of the disease. In the 3 preceding weeks, the total deaths from all forms of tuberculous disease were 33, 35, and 28, respectively.

Two deaths were due to carcinoma and one to sarcoma.

There were 3 deaths of infants prematurely born.

Of 5 deaths from diseases of the brain and nervous system, 3 were from *convulsions*. Of the latter deaths, 2 were of infants under one year of age, and one was of a child between the ages of one year and 5 years.

Thirteen deaths were caused by diseases of the heart and blood-vessels, and bronchitis caused 16 deaths.

Of 2 accidental deaths, one was on a railway and one was in a conflagration.

In 8 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 6 children under 5 years of age (including 5 infants under one year old) and the deaths of 2 persons aged 60 years and upwards.

Fifty of the persons whose deaths were registered during the week were under 5 years of age (31 being infants under one year, of whom 8 were under one month old), and 27 were aged 60 years and upwards, including 13 persons aged 70 and upwards, of whom 3 were octogenarians, and 2 (a male and a female) were stated to have been aged 98 and 94 years, respectively.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr.

Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. Byrne Power, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended August 10, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	July 20	-	*	*	-	-	-	2	-	4	4	18	-	*	*	*	28
	July 27	-	*	*	4	-	-	1	-	6	4	5	-	*	*	2	22
	Aug 3	-	*	*	1	-	-	4	-	2	5	16	-	*	*	*	28
	Aug. 10	-	*	*	2	1	-	5	-	2	5	13	-	*	*	*	28
Rathmines and Rathgar Urban District	July 20	-	*	*	-	-	-	-	-	-	1	1	-	*	*	*	2
	July 27	-	*	*	1	-	-	-	-	-	1	-	-	*	*	*	2
	Aug. 3	-	*	*	2	-	-	-	-	-	-	-	-	*	*	*	2
	Aug. 10	-	*	*	1	-	-	-	-	-	-	-	-	*	*	*	1
Pembroke Urban District	July 20	-	7	-	-		-	1	-	-	-	1	1	*	2	*	12
	July 27	-	10	-	1	-	-	-	-	-	-	1	-	*	7	*	19
	Aug. 3	-	5	-	-	-	-	-	-		-	-	-	*	-	*	5
	Aug. 10	-	39	-	-	-	-	1	-	1	-	-	-	*	2	*	43
Blackrock Urban District	July 20	-	*	*	-	-	-	-		-	-	-	-	*	*	*	-
	July 27		*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Aug. 3	-	*	*	-	-	-	1	-	-	-	-	-	*	*	*	1
	Aug. 10	-	*	*	1	-		-	-	-	-	-	-	*	*	*	1
Kingstown Urban District	July 20	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	July 27	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Aug. 3	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Aug. 10	-	*	*	1	-	-	-	-		-	-	-	*	*	*	1
City of Belfast	July 20	-	*	*	12	-	-	4	-	6	4	3	-	*	*	7	36
	July 27	-	*	*	2	-	-	3	-	2	4	6	2	*	*	2	21
	Aug. 3	-	*	*	5	-	-	4	1	11	2	1	-	*	*	3	27
	Aug. 10	-	*	*	2	-	-	1	-	4	4	4	-	*	*	5	20

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended Saturday, August 10, 1907, 8 cases of measles were admitted into hospital, 3 were discharged, there was one death, and 27 cases remained under treatment at its close. At the close of each of the three preceding weeks the cases of measles under treatment numbered 31, 24, and 23.

Ten cases of scarlet fever were admitted to hospital, 8 were discharged, and 40 cases remained under treatment at the close of the week. This number is exclusive of 6 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was admitted to hospital during the week, and 2 cases remained under treatment at its close.

Four cases of diphtheria were admitted to hospital, 2 were discharged, there was one death, and 19 patients remained under treatment at the close of the week.

Five cases of enteric fever were admitted to hospital, 3 were discharged, there was one death, and 24 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 6 cases of pneumonia were admitted to hospital, 8 were discharged, and 19 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, August 10, in 76 large English towns, including London (in which the rate was 12.0), was equal to an average annual death-rate of 11.8 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 13.8 per 1,000, the rate for Glasgow being 14.4 and for Edinburgh 13.9.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his return of Infectious Diseases notified during the week ended August 10. From this Report it appears that of a total of 29 cases notified 13 were of scarlet fever, 6 of diphtheria, 5 of erysipelas, and one of enteric fever. Among the 277 cases of infectious diseases in hospital at the close of the week were 81 cases of scarlet fever, 46 of measles, 45 of whooping-cough, 25 of diphtheria, 2 of membranous croup, 10 of erysipelas, and 8 of enteric fever.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of July,* 1907.

Mean Height of Barometer,	30.014 inches.
Maximal Height of Barometer (11th, at 9 a.m.),	30.507 „
Minimal Height of Barometer (3rd, at 9 p.m.),	29.450 „
Mean Dry-bulb Temperature,	58.7°.
Mean Wet-bulb Temperature,	55.5°.
Mean Dew-point Temperature,	52.7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.403 inch.
Mean Humidity,	80.9 per cent.
Highest Temperature in Shade (on 17th),	77.3°.
Lowest Temperature in Shade (on 11th),	43.8°.
Lowest Temperature on Grass (Radiation) (11th),	39.7°.
Mean Amount of Cloud,	61.3 per cent.
Rainfall (on 19 days),	2.022 inches.
Greatest Daily Rainfall (on 3rd),	.460 inch.
General Directions of Wind,	W., N.W., S.W.

Remarks.

True to the character of 1907, July was a changeable month, full of surprises. Until the 12th the weather was unseasonably cold and very showery. In Dublin rain fell daily on the first nine days—heavily on the 2nd (.390 inch), and 3rd (.460 inch). On the latter day a thunderstorm occurred at 1 p.m. On the 12th a warm period set in, lasting till the 22nd. The warmth was at first accompanied by gloom and a muggy atmosphere, but the 17th and 18th were perfect summer days. On the 19th a series of electrical disturbances began, thunder and lightning prevailing day after day for four days. Near Dublin the centre of the storms was over the mountains, an easterly sea breeze along the coast piling up vast masses of cumulus above the hills. On the afternoon of Sunday, the 21st, the display of forked lightning over the mountains was very fine, and torrential, though local, showers sent a freshet down the Bray Water. From the 24th to the end of the month, showery weather again prevailed, and the wind became strong and gusty from S.W. to N.W. points of the compass.

In Dublin the arithmetical mean temperature (59.6°) was

0.9° below the average of the 35 years 1871–1905 (60.5°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 58.7°. In the forty-three years ending with 1907, July was coldest in 1879 ("the cold year") (M. T. = 57.2°). It was warmest in 1905 (M. T. = 63.8°); in 1887 (M. T. = 63.7°); in 1868 ("the warm year"); in 1901 (M. T. = 63.5°); and in 1900 (M. T. = 63.4°). In 1906 the M. T. was 60.7°.

The mean height of the barometer was 30.014 inches, or 0.099 inch above the corrected average value for July—namely, 29.915 inches. The mercury rose to 30.507 inches at 9 a.m. of the 11th, and fell to 29.450 inches at 9 p.m. of the 3rd. The observed range of atmospheric pressure was, therefore, 1.057 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 58.7°, or 4.3° above the value for June, 1907. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.* × .465), the value was 59.1°, or 1.0° below the average mean temperature for July, calculated in the same way, in the thirty-five years 1871–1905 inclusive (60.1°). The arithmetical mean of the maximal and minimal readings was 59.6°, compared with a thirty-five years' average of 60.5°. On the 17th, the thermometer in the screen rose to 77.3°— wind, N.W. On the 11th the temperature fell to 43.8°—wind W.N.W. The minimum on the grass was 39.7°, also on the 11th.

The rainfall was 2.022 inches, distributed over 19 days. The average rainfall for July in the thirty-five years 1871–1905, inclusive, was 2.68 inches, and the average number of rainy days was 17. The rainfall, therefore, was below, while the rainy days were above, the average. In 1880 the rainfall in July was very large—6.087 inches on 24 days; in 1896, also, 5.474 inches fell on 18 days. On the other hand, in 1870, only .539 inch was measured on 8 days; in 1869, the fall was only .739 inch on 9 days; and in 1868, .741 inch fell on but 5 days. In 1906, 1.023 inches fell on 13 days.

High winds were noted on only 2 days, and never attained the force of a gale. Temperature reached or exceeded 70° in the screen on 8 days, compared with 10 days in 1906, 17 days in 1905, 10 days in 1904, and 7 days in both 1902 and 1903. The thermometer failed to reach 60° on the 6th, when the maximum was 59.7°. In July, 1887, temperature reached or exceeded 70° in the screen on no fewer than 17 days. In 1888 the maximum for July was only 68.7°.

A solar halo was seen on the afternoon of the 7th. Thunderstorms occurred on the 3rd, 21st, and 22nd; thunder was heard on the 5th, 20th and 21st; and lightning was seen on the 19th, 21st and 31st. There was a fog on the 14th.

The rainfall in Dublin during the seven months ending July 31st amounted to 14.358 inches on 127 days, compared with 13.664 inches on 122 days in 1906, 11.022 inches on 109 days in 1905, 13.905 inches on 117 days in 1904, 19.072 inches on 131 days in 1903, 15.507 inches on 115 days in 1902, 11.432 inches on 93 days in 1901, 17.609 inches on 129 days in 1900, 14.416 inches on 107 days in 1899, 13.060 inches on 106 days in 1898, 15.600 inches on 125 days in 1897, 7.935 inches on 80 days in 1887, and a thirty-five years' (1871–1905) average of 14.71 inches on 113 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. William J. Good, reports that the mean height of the barometer was 30.020 inches, the range of atmospheric pressure being from 30.511 inches at 9 a.m. of the 11th to 29.457 inches at 9 p.m. of the 3rd. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 58.9°. The arithmetical mean of the daily maximal and minimal temperatures was also 58.9°. The screened thermometers rose to 79.5° on the 17th, and fell to 43.0° on the 11th. On the 11th the grass minimum was 33.0°. On the 17th the black bulb *in vacuo* rose to 125.5°. Rain fell on 18 days to the amount of 1.777 inches, the greatest fall in 24 hours being .385 inch on the 2nd. The duration of bright sunshine, according to the Campbell-Stokes recorder, was 178.1 hours, of which 13.2 hours occurred on the 18th. In July, 1904, there were 201 hours of bright sunshine, in July, 1905, 162.2 hours, and in July, 1906, 184.8 hours. The mean sub-soil temperatures were—at 1 ft., 59.5°; at 4 ft., 55.7°. The one-foot thermometer ranged between 55.7° on the 7th and 63.9° on the 19th. The four-feet thermometer ranged from 53.9° on the 1st to 57.9° on the 31st.

Dr. Arthur S. Goff reports that at Lynton, Dundrum, County Dublin, the rainfall was 1.79 inches on 16 days. The maximal fall in 24 hours was .37 inch, measured on the 5th. The mean temperature was 61.0°, the range being from 81° on the 16th to 44° on the 11th. In July, 1901, 2.65 inches of rain fell at this station on 11 days; in 1902, 4.27 inches on 91 days; in 1903, 3.66 inches on 24 days; in 1904, 1.22 inches on 17 days; in 1905, .98 inch on 20 days; and in 1906, 1.25 inches on 18 days.

At White Cross, Stillorgan, Miss Muriel E. O'Sullivan measured 1.821 inches of rain on 18 days, the largest amount which fell in 24 hours being .280 inch on the 2nd.

At Cloneevin, Killiney, Co. Dublin, Mr. Robert O'Brien Furlong, C.B., reports that the rainfall in July was 1.94 inches on 18 days, compared with a twenty-two years' (1885–1906) average of 2.434 inches on 15.0 days. On the 3rd the rainfall was .38 inch. In July, 1906, .97 inch fell on 14 days; in 1905. 1.03 inches fell on 15 days; in 1904, only .77 inch on 15 days; in 1903, 3.54 inches on 19 days; in 1902, 3.64 inches on 13 days; in 1901, 2.80 inches on 13 days. Thunder occurred on the 19th, 20th, 21st and 22nd. Since January 1, 1907, 13.61 inches of rain have fallen on 114 days at this station, compared with 13.54 inches on 95 days in the corresponding 7 months of 1901, 16.90 inches on 111 days in 1902, 17.39 inches on 122 days in 1903, 13.69 inches on 110 days in 1904, 13.59 inches on 104 days in 1905, and 12.92 inches on 118 days in 1906. The lowest July fall was .70 inch on 9 days in 1885; the highest, 6.72 inches on 20 days in 1896.

Mr. T. Bateman reports that the rainfall at the Green, Malahide, Co. Dublin, was 1.756 inches on 17 days. The largest daily fall was .245 inch on the 2nd, and again on the 24th. The mean shade temperature was 59.1°, the extremes being—highest. 76.5° on the 17th; lowest, 42.0° on the 30th.

At the Ordnance Survey Office, Phœnix Park, rain fell on 18 days to the amount of 2.151 inches, the greatest rainfall in 24 hours being .415 inch on the 9th. The total duration of bright sunshine was 174.9 hours, the longest daily sunshine being 13.3 hours on the 17th.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in July was 2.525 inches on 13 days, compared with 1.095 inches on 13 days in 1906, 1.932 inches on 11 days in 1905, 1.395 inches on 15 days in 1904, 2.790 inches on 17 days in 1903, 4.550 inches on 11 days in 1902, and 2.390 inches on 10 days in 1901. Of the total rainfall .630 inch fell on the 13th. The total fall since January 1 has been 16.615 inches on 105 days, compared with 13.630 inches on 86 days in 1906, 13.043 inches on 88 days in

1905, 15.702 inches on 109 days in 1904, 20.230 inches on 107 days in 1903, 19.641 inches on 95 days in 1902, and 16.060 inches on 85 days in 1901.

Dr. Arthur G. Price reports that at Clonsilla, Greystones, rain fell on 18 days to the amount of 2.23 inches. The mean temperature was 55.0°, the extremes being—highest, 77° on the 17th; lowest, 44° on the 10th, 11th and 30th. The heaviest rainfall in 24 hours was .55 inch on the 13th.

Dr. Francis P. Leyland reports that at the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, rain fell on 18 days to the amount of 2.209 inches, the maximal fall in twenty-four hours being .385 inch on the 9th. The mean temperature for the month was 5 ° ; the extremes being—highest 79.0° on the 17th; lowest, 43.4° on the 11th. The July rainfalls in recent years at this station were—1903, 4.309 inches on 22 days; 1904, 2.256 inches on 18 days; 1905, 1.991 inches on 12 days; 1906, .934 inch on 13 days. Since January 1, 16.930 inches of rain have fallen at this station on 119 days.

According to Mr. W. Miller, the rainfall in Cork City was 2.20 inches, or .43 inch less than the average, and the rainy days were 13. The greatest fall was .85 inch on the 24th. The mean temperature of the month was 58.6°, or 1.7° below the average for July. The thermometer rose to 78.0° on the 18th and 19th, and fell to 41.0° on the 2nd. The rainfall for 1907 up to July 31 was 16.36 inches—or 4.25 inches less than the average for the first seven months of the year—on 110 days.

The Rev. Arthur Wilson, M.A., reports a rainfall of 2.17 inches on 12 days at Dunmanway Rectory, Co. Cork. The heaviest falls in 24 hours were—.50 inch on the 4th, and .48 inch on the 24th. There was absolute drought from the 13th to the 22nd, with very hot weather, especially on the 17th and 18th. During the first week there was an exceedingly cold N.W. wind. Sheet lightning was seen on the night of the 22nd.

Dr. J. Byrne Power, D.P.H., F.R. Met. Soc., Medical Superintendent Officer of Health, Kingstown, reports that the mean temperature at that station was 58.5°, being the lowest mean for July, as compared with a record of 20 previous years (1873–83 and 1898–1906), and 2.1° below the average for the month during these 20 years. The extremes were—highest, 75.5° on the 18th; lowest, 42.5° on the 11th. At Bournemouth the mean was 59.1°, being the lowest mean for the month at that station, as compared with a record of 9 previous years, and as much as 3.7° below the average during those years. The extremes were—highest, 79°, on the 16th; lowest, 45°, on the 13th. The mean range of temperature was 11.6° at Kingstown, and at Bournemouth 14.4°. The average temperature of the sea at Sandycove bathing-place was 58.2°, being only 0.3° below the average for the month during the previous 9 years, and the only July during those years for which the mean temperature of the sea was higher than that of the land. The mean relative humidity was 76 per cent., being the average percentage for the month at Kingstown during 6 previous years. The rainfall amounted to 2.16 inches on 16 days, being 0.39 inch below the average for the month during 17 previous years (1873–83 and 1901–06). The duration of bright sunshine was 175.8 hours, being 2.5 hours below the aveiage of the month during the previous 6 years. The duration at the Ordnance Survey Office, Phœnix Park, Dublin, was 174.9 hours, 223.9 hours at Bournemouth, and 218.3 hours at Southport.

UNITED SERVICES MEDICAL SOCIETY.

The first meeting of the Council of the newly-formed United Services Medical Society was held on May 30th. It was decided that meetings be held at the Royal Army Medical College at 8 30 p.m. on the second Thursday in each month, commencing on October 10th, 1907; that the annual subscription be 5s., payable in advance; and that a notification of the formation of the Society, accompanied by an invitation to join, be sent to all medical officers on the active lists and to those on the retired lists whose addresses can be discovered. Should any medical officer on the active or retired list of the navy, the British and Indian armies, or the auxiliary and Colonial forces, not receive an invitation the council hope that, if desirous of joining the society, he will communicate with one of the honorary secretaries—Fleet Surgeon W. W. Pryn, R.N., "Tredown," 25 Idmiston Road, West Norwood, London, S.E.; or Lieut.-Col. C. H. Melville, R.A.M.C., Royal United Service Institution, Whitehall, London, S.W.

PERISCOPE.

STYRACOL IN PULMONARY TUBERCULOSIS.

In a comprehensive article, comprising a clinical study of 293 cases of pulmonary tuberculosis, Drs. Karl von Ruck and Silvio von Ruck speak well of the results they have obtained with the watery extract of tubercle bacilli in the various stages of the disease, treated at the Winyah Sanitarium, Asheville, N. C., in 1905 and 1906. Other drugs were but rarely employed, but styracol (guaiacol cinnamic ester) gave satisfaction. The following remarks are thus made concerning tuberculous affection of the intestines:—"In 16 cases the clinical symptoms were sufficiently marked, even if tubercle bacilli had not been demonstrated in the fæces, to leave little if any doubt of the presence of ulceration. In 9 of the cases the symptoms subsided, and there was no return on the resumption of an ordinary diet. In 4 cases the symptoms were much improved, while in 3 cases they could be only more or less controlled. In these cases opium with acetate of lead appeared most serviceable in checking the diarrhœa, the addition of the lead salt appearing of striking benefit. The much better results in the present cases, as compared with the cases of the last report may, of course, be matter of coincidence, and we fully appreciate that so small a number of cases does not justify conclusions of the therapeutic value of remedies employed, but we are nevertheless of the opinion that the use of styracol in large doses and for prolonged periods has been of material aid in the treatment of this most undesirable complication of the cases discharged, as also in a number of others still under treatment." For a description of styracol (guaiacol cinnamic ester) see the *Journal of the American Medical Association*, Vol. XLVII., No. 22. The dose is, for an adult, 15 grains three to four times daily in powder or in five-grain tablets.

AUSTRALASIAN MEDICAL CONGRESS.

The eighth session of the Australasian Medical Congress will be held in Melbourne, in 1908, under the presidency of Professor H. B. Allen, M.D., the session commencing on Monday, October 19th, and terminating on Saturday, October 24th. The subscription is one guinea net, and will entitle every member to a copy of the "Transactions of Congress." The railway departments of Australasia will issue concession tickets to members (with wife or one lady relative accompanying the member) for the return journey at the usual special rates, on presentation of certificates in prescribed form signed by the State Secretaries of Congress. Particulars will be supplied to intending members by the State Secretaries. It is anticipated that reductions in fares, similar to those granted in previous years, will be made by the Interstate Steamship Companies. The Council of the University of Melbourne has kindly granted the use of its buildings. The Government of Victoria has, with customary liberality, undertaken the printing of the transactions. Addresses will be given in full congress by the presidents of the Sections of Medicine, Surgery, Pathology and Bacteriology, and Public Health. Special meetings of the congress will be devoted to the following subjects:—(*a*) The relations of the medical profession to hospitals; (*b*) syphilis. Committees for the various sections are in correspondence with the presidents and vice-presidents of sections, with a view to the early selection of subjects for consideration. The general secretary is H. C. Maudsley, M.D., Lond., F.R.C.P. Lond., 8 Collins Street, Melbourne.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

"*Phenofax.*"

"PHENOFAX" is an antiseptic sedative dressing, which presents 7 per cent. of pure phenol in a bland basis. It exercises a sedative and healing effect on the skin and mucous surfaces, and is markedly superior to preparations hitherto available for the local application of carbolic acid. "Phenofax" disinfects, allays pain, and encourages granulation. As an antiseptic healing dressing for wounds, abrasions, burns and ulcers, it may be applied on lint. It may be used as an ointment in parasitic skin disease and irritating eruptions generally. "Phenofax" is specially suitable in the treatment of ulceration of the os or cervix uteri, or for application to affected mucous surfaces as in inflammation of the uterus or vagina. "Phenofax" is prepared by Messrs. Burroughs Wellcome & Co., London, and is supplied to the medical profession in glass pots.

THE DUBLIN JOURNAL
OF
MEDICAL SCIENCE.

OCTOBER 1, 1907.

PART I.
ORIGINAL COMMUNICATIONS.

ART. IX.—*Sleep.*[a] By RALPH S. OLDHAM, M.D. (Univ. Dub.), Blackpool.

SLEEP may be defined as a normal state of unconsciousness, of a greater or less degree, occurring at periodical intervals and accompanied by reparative changes.

Nature demands as a general law that physiological rest must alternate with physiological activity. To ensure a renewal of the energy expended, rest alternates with work in all vital phenomena; and in order that the functions of life may be carried on to their fullest extent it is essential that these alternations should occur in a definite, continuous, and rhythmical cycle. As might be expected, it is in man, where the purely assimilative functions of life are balanced by that complex mechanism whereby he possesses well-defined sensory relations to the external world, and where the operations are still further complicated by the super-addition of an intellectual nature, that the periodical recurrence of repose is most marked and its regularity most essential.

During sleep there are certain definite physiological changes

[a] The basis of this Paper was awarded the Medal of the Dublin University Biological Association in 1905.

that are constantly to be observed which express themselves in general terms as diminished activity—of the heart, the respiration, the gastric and intestinal movements, of the formation of heat and secretions, and, above all, of the whole nervous system. The intake of oxygen and (to a more marked extent) the elimination of CO_2 is diminished; less urine is secreted, and the percentage of urea falls. Thoracic respiration becomes more active than diaphragmatic, while in many cases, especially amongst children, Cheyne-Stokes respiration has been observed.

The lessened production of heat, which is, according to Helmholtz, one-third less than that of the waking state, is, of course, largely to be accounted for by the inactive and relaxed condition of the muscular system. But there is no doubt that there is a decrease in the amount of molecular change in the body tissues generally, and, when the whole process of metabolism is thus lowered, it is but natural to find the dependent temperature of the body lowered with it.

Some curious changes take place in the eyes. The pupils are contracted, and the greater the depth of the sleep the more pronounced is this contraction, so that in the deepest sleep the iris ceases to respond to the stimulus of light. As a rule, however, the employment of any sensory stimulus causes dilatation of the pupil, and this becomes more obvious as the sleep gets lighter, till at waking they are dilated to their full extent. The eyeballs are in most cases described as being rolled upwards and converging, though some authorities state that divergence takes place; others again declare that in true natural sleep the axes of the eyeballs are parallel and directed to the far distance. In children the eyeballs occasionally show continued movements of an irregular and asymmetrical nature, *without* any change in the pupils. A point to be noted is that, though muscular relaxation is almost complete and universal, both the orbicularis palpebrarum and the sphincter iridis are in a condition of active contraction. Now, since the retina is quiescent and in the dark, we would expect the pupil to dilate; and the fact that it does not points to important actions taking place in the brain.

The changes that take place in the vascular condition of the brain and in the microscopical appearances of its cells are so intimately associated with some of the theories that have been advanced as to the causation of sleep that it will be better to deal with them together, and they will be gone into later more fully. Suffice it to say at present that the nerve-centres of both brain and spinal cord show a diminution in their excitability. The capacity of the central nervous system to react to appropriate stimuli is never lost; but reflex action is in abeyance and the spinal cord in a state of partial inactivity, though never to such an extent as the cerebral cortex. Only the organic centres do not sleep, yet even they enjoy a certain repose.

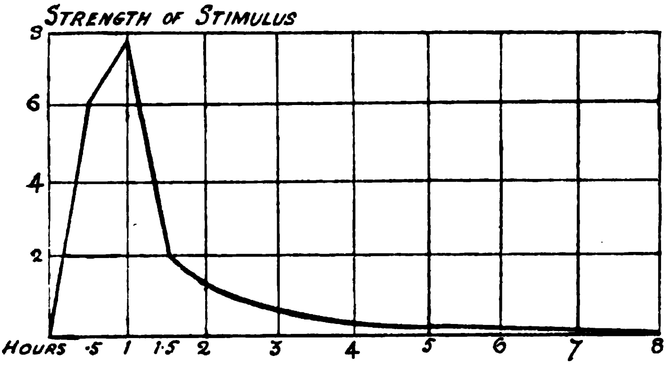

Fig. 1.

(After Howell.)

The amount of sleep required varies with age, sex, habit, occupation, and perhaps climate. In the child the cerebral faculties are easily exhausted, and the main business of the infant economy being nutrition and growth the child spends at least half its time in sleep. The man, whose main business is to work with hand or brain, requires his full tale of eight hours a day, while the old do little more than eat and sleep. Women generally require a rather more liberal allowance than men, but should it become necessary to curtail it they will bear the first loss better. Habit is, of course, a most important factor, and is illustrated in the lives of every active nurse and doctor, while idiosyncrasy has also a marked influence. Napoleon, in the height of his career, never slept more than four or five hours a day, and the same daily allowance sufficed for the needs of Frederick of Prussia throughout the greater part of his long and active life.

In general, the depth of sleep rises rapidly to its maximum in the first hour, falls abruptly in the second, and then slowly creeps down to its minimum, which is reached just before the sleeper awakens. These facts were first announced by Kolschütter, who measured the depth of sleep by the intensity of sound required to awaken the subject. In the accompanying diagram (Fig. 1) the sound was caused by the fall of a ball upon a plate, and the height from which it was dropped served as a ready means of representing the strength of the stimulus required.

The most usual form of sleep is, however, by no means so profound as that so far described. Some of the intellectual functions are often at work, and

DREAMING

with or without accompanying action is the result. In such a case a kind of hushed consciousness is restored, yet often with peculiar modifications. The cerebral hemispheres are particularly active, but inhibitory power is deficient, and the mind has therefore no control over the images which crowd upon it. It is characteristic of a healthy waking man that, as a basis of all his knowledge and all his actions, there is a profound conviction of his own personality and a consciousness of distinct existence. To put it in the language of the metaphysician, he is imbued with an undefinable though irrefragable intuition of the unchanging Ego. Now, one of the most peculiar modifications of consciousness in dreaming is a loss of this distinct sense of individuality. Imagination and memory are both awake, but they play strange tricks with each other and with their possessor. He will contemplate his own murder or attend his own funeral with the utmost satisfaction; he will watch the most tremendous convulsions of nature, and the utter subversion of her ordinary laws, without even expressing a mild surprise; and he will converse with the dead in a natural and easy manner, or go through the most astonishing experiences as a matter of course.

From the earliest times the wonders of dreaming have caused a profound impression on mankind, and the human mind is constantly seeking for some rational explanation of so mysterious a phenomenon. Though the scope of this communication is intended to be purely physiological, in discussing such a subject as dreams it is extremely difficult to keep within the bounds of physiology and not to encroach upon the domain of the metaphysician or psychologist. It is, perhaps, this almost inevitable intermingling of the two aspects of the subject that has led to so much confusion in all attempts to elucidate its mysteries. In an endeavour to avoid this pitfall and to keep at least one line of investigation clearly in view it would be necessary to disregard many curious mental characteristics of the dreaming state and to ignore all psychological problems except those having a direct bearing on the case. Such a procedure, however, would inevitably result in the practical elimination of all our knowledge and experience of the subject. It is impossible, with our present limited outlook in physiology, to say with any approach to definiteness what it is that constitutes mind; consequently, we are debarred at the very outset from discussing the vagaries of the mind in dreaming from a physiological standpoint. Hence it will not, I hope, be considered out of place if I refer briefly (and so to speak parenthetically) to some of its more striking peculiarities which offer themselves as problems for discussion to the mind of the metaphysician. It will be my object later to bring the origin of sleep and the origin of the dreaming state into the same physiological category, and to show that they possess a definite causal relationship.

Dreams are for the most part incoherent, shadowy representations of scenes and ideas, arranged in ever-changing and grotesque combinations. As a rule the sleeper is utterly oblivious to all ideas of time or space. Scenes that ought to occupy weeks or months are enacted in an immeasurably short interval. Mahomet declared that he was conveyed by the angel Gabriel through the seven heavens, paradise, and hell, and held 59,000 conferences with God, and was brought back to his bed before the water had finished flowing from a pitcher he upset as he departed.

It is rather difficult to account for this phenomenon. It may be to a great extent due to the absence of fixity of thought—a want of attention—so that there is no apparent connection between successive pictures presented to the mind's eye. But is it not possible that in these cases there is not so much a succession of ideas as a simultaneous picture presented, which the mind interprets by a law of its own into what is past and what is passing? Even as the eye interprets the distance of the various parts of a perspective, according to the degrees of light and shade, so may not the mind itself be subject to the laws of perspective? And just as the eye will often make an erroneous estimate of distance when objects are seen through an unusual medium, such as a fog, so too may not the mind be subject to similar illusions and interpret occasionally what are really faint impressions into what it deems to be the fading traces of past experiences?

Though dreams are for the most part incoherent, it sometimes, though rarely, happens that the sleeper retains his ordinary powers of reflection and consecutive thought. What has been left undone in waking moments is finished, and well finished, in sleep; new ideas and compositions have been dreamed out and accurately remembered afterwards, as was Coleridge's "Kubla Khan."

The striking sense of reality in some dreams depends largely on the general absence of external impressions. The waking man distinguishes external impressions from his own ideas by their greater intensity. When all sensation is withdrawn, however, no such comparison is possible, and thus the ideas become relatively increased into the vividness of external impressions. Occasionally the dream is so vivid as to awaken the power of voluntary motion, and the dreamer acts or speaks his dream. From these elementary actions, constituting what is generally referred to as "troubled dreams," up to the most perfect state of

SOMNAMBULISM,

in which the most complex operations are performed, we have every gradation, indicating the perfect identity of the phenomena as to essential nature. The two conditions merge into each other so imperceptibly that it is impossible to lay down a sharp line of demarcation between them; yet one is so common as to be justly considered a physiological manifestation, whilst the other is undoubtedly pathological. And it ought clearly to be recognised as such, since, from a medicolegal point of view, it becomes of the greatest importance. There is scarcely any action of which the somnambulist is incapable, and yet no moral responsibility could with any justice be accredited to the victim of such a state—a mere automaton, whose acts are carried out with absolute indifference and with an obvious absence of self-control. That we may be the better prepared, by a collection of facts, inductively to ascertain the true nature of the phenomena, it will be advisable to give a few illustrations, beginning with the simplest forms and advancing to those of great intellectual complication.

Hippocrates first notices the true somnambulism, the imitation of actions in accordance with sleeping ideas. It is those acts which are most habitual by day that are most frequently re-enacted by night, and there are innumerable instances on record of these mechanical employments being carried on in sleep. Sometimes, indeed, they are of an extraordinary nature. Those who ride much on horseback will either do so in sleep or will imitate the action; others will even swim for a considerable time without awakening, as in a case related by Macnish as occurring off the coast of Ireland. The sleeper walked through a difficult and dangerous road nearly two miles, and, plunging into the water, swam a mile and a half before he was discovered, still fast asleep.

But the phenomena become much more interesting when the manifestations of activity are more specifically intellectual, and where at the same time the state of the special senses can be studied. Two very instructive cases are quoted by Pritchard. The first is that of an Italian noble, in whom the attacks were usually announced by a peculiar manner of sleeping on the back with wide open staring eyes. On one occasion, after rising, putting on his clothes, and performing a variety of movements about the house, he went to the stable, saddled and mounted his horse, and galloped up to the house door, at which he knocked. He took back his horse, went to the billiard-room and enacted the motions of a player, and then performed a few irregular airs on the harpsichord. He heard a noise which the servants made, and went to the door, listening attentively, but took no notice of a light held close under his eyes, although they were open and staring. After having moved about for two hours he threw himself on his bed just as he was, and was found next morning in the same state. "As often as the attack came on he slept afterwards from eight to ten hours, and the servants declared they could only put an end to his paroxysms by tickling the soles of his feet or blowing a trumpet in his ear."

The second case is especially valuable as having been separately watched by two physicians. He was a servant who could often repeat in his sleep the accustomed duties of the day, and would carry trays and glasses, or lay the table with great accuracy, although his eyes were always firmly closed. Indeed it was apparent that he could not see, as he frequently struck against doors and objects placed in unaccustomed positions.

In other cases the senses are more awake and the intelligence more active. A sleeper was found in the act of translating Italian into French with the aid of a dictionary. When conversed with on the subject on which his mind was bent at the time he gave rational answers, but he seemed to hear nothing that was said to him on other subjects. His eyes were quite fixed, so much so that in reading he turned the whole head from side to side instead of the eyes.

A remarkable case is related of a young priest who used to rise in his sleep and write sermons. Having written a page he would read it aloud and make corrections. He continued to write, although a card was held between his eyes and the paper, and when a piece of blank paper of the exact size was substituted for his own manuscript he made the corrections upon it in the precise situation which they would have occupied on the original paper, crossing imaginary *t's* and dotting imaginary *i's*.

Without quoting further illustrative examples of sleep-walking it will be sufficient to briefly summarise the more remarkable anomalies of the physiological functions that have been observed in these and other recorded cases.

1. *The Muscular System* is apparently under the control of the will, and its movements are often more powerful and accurate than at other times. Feats can be performed with safety and accuracy which the individual would never dare to attempt when awake.

2. *The Sight.*—The eyes are sometimes closed, sometimes fixed and staring, the pupils widely dilated or extremely contracted, but in all conditions evidently unfit for ordinary vision, and almost always insensible to any light experimentally thrown upon them. Yet there are often unmistakable evidences of the recognition of objects. They are often sought for and found, sometimes with a light, sometimes without; generally the somnambulist will find his way perfectly in the dark, and he will continue to write with the same accuracy as before when an opaque object is held between his eyes and the paper. This latter experiment gives us a clue to the nature of the vision which the somnambulist enjoys. Such observations indicate that the writing is accomplished, not by ocular vision but by a most accurate *mental* picture of the page before him. The paper is imprinted on his imagination, and every letter he means to write is also printed there, in the exact place in which it ought to stand on the paper, and without being confounded with the other letters. This explanation becomes the more satisfactory when it is remembered how accurately all muscular movements are performed in a state of somnambulism; the mind is intent on one thing only, and does that perfectly,

undisturbed either by any external influences or by any complexity of ideas within, and the hand, which is obedient to the will, traces in their proper order on the real paper the letters which are already pictured in the mind.

3. *The Sense of Hearing* is also found in very different conditions. Some hear the slightest noise, but invariably misinterpret it; others are insensible to the loudest noises, but will converse on subjects immediately connected with their specific train of thought.

4. *The Smell and Taste* present similar anomalies, being sometimes more sensitive than natural, sometimes less so, and sometimes perverted.

5. *The Touch* is the most active of all the special senses, being as much increased in sensibility as is the energy of the muscular system; probably much of the information usually obtained by the other senses is acquired through the increased energy of this.

HYPNOSIA

Is a term which has been applied to a condition in which more sleep than usual is indulged in, owing to less power in resisting its onset. In its worst forms a sleep may be prolonged almost indefinitely from weeks to months, and terminate in convulsions and death. In other cases the patient awakes in an exhausted condition, with pallid features and cold extremities, only to relapse again, after a brief interval, into the sleeping state. What appears to be simply a very mild manifestation of this pathological phenomenon is a condition of *somnolency*, where the subject falls asleep at once, unless his attention is being fully occupied and his mental faculties fully exercised. Austin Flint records two such cases, represented by both sexes, and the peculiarity was the cause of the gravest inconvenience. An uninteresting book, a lull in a conversation, a pause in a game while one player was deliberating—all were the occasion for the individual to at once drop into a doze, which it was found impossible to resist. Perhaps the best example of the condition is the fat boy in *Pickwick Papers*, whose peculiar case we now see receives the benefit of medical testimony and clinical support.

If now we review briefly the various forms of sleep described in the foregoing pages it may be seen that the phenomena can be divided into five stages or types :—

1. *Profound Sleep.*
2. *Dreaming.*
3. *Acted Dreams.*—This includes those cases where the subject speaks without acting, or acts without speaking, only so far as irregular gestures, muttering and talking are concerned.
4. *Somnambulism.*—Rising from bed, visiting accustomed or unaccustomed scenes, and performing various mechanical acts.
5. *Somnambulistic Dream.*—In addition to the other phenomena many mental acts—such as judgment, synthesis, analysis—are performed, and the special senses, though closed to ordinary influences, are aroused to a modified activity.

The following Table, modified from Chambard in the *French Encyclopædia of Medical Science*, shows at a glance the relations of the internal conditions of sleeping and waking and of dreaming and the somnambulistic states :—

	Organic Life	Consciousness	Imaginative Faculties	Co-ordinating Faculties	Power of Movement and Sensibility
Normal waking state -	—	—	—	—	—
Sleep—1st degree -	—	—	—	—	
,, 2nd degree (dreaming state) -	—	—	—		
Sleep—3rd degree -	—	—			
Profound sleep - -	—				
Acted dreams -	—		—	—	—
Somnambulism - -	—				—
Somnambulistic dream -	—		—		—

But what is the proximate cause of all these phenomena? What is the condition of the brain during these states?

Normal sleep is accompanied by changes in the microscopical appearances of the nerve-cells. Thus Hodge found differences between certain cells of the cerebral cortex in birds, and of certain ganglia in the honey-bee, after a long day of work and after a night's rest; and Mann and other observers in the cortical cells of dogs fatigued by muscular exercise as compared with rested dogs. A recuperative process had clearly occurred whereby the destructive changes brought about by fatigue had been neutralised, and the cell restored to a vigorous condition.

The vascular changes in the brain have given rise to an enormous amount of discussion. The older view was that the brain was in a state of congestion; for in coma, a pathological condition which in some respects has analogies to profound sleep, the brain is congested and its nervous tissue presumably compressed. But Durham's experiments in 1860 definitely settled the question. He trephined a small piece of bone from the parietal region of the dog and inserted a watch-glass in its place. As a result of his observations he came to the following conclusions:—(1) That the brain during sleep is anæmic to a degree, the blood being diminished both in quantity and in the rapidity of its flow; (2) and that anything which increases the cerebral circulation tends to induce wakefulness, whilst anything that diminishes it renders the sleep more profound.

Durham's results were confirmed by Hammond, Weir Mitchell, and others, and later extended by Mosso by means of a graphic record whereby simultaneous tracings were taken of the pulse, the heart, the respiration, and the brain, in a man, a woman, and a child. The plethysmograph showed a diminished amount of blood in the brain and an increased amount in the extremities. On the sleeper being subjected to a stimulus not sufficient to wake him, the vessels of the forearm contracted, causing a rise of general blood-pressure and a determination of blood to the brain, whilst the respiratory and cardiac undulations were also modified. Further, Mosso was able to record three different movements of the brain—viz., (*a*) small pulsations, synchronous with the beats of the heart; (*b*) larger oscillations, the result of the varying pressure caused by the respiratory movements; and (c) still larger undulations, longer and less marked, which he attributed to rhythmic vasomotor impulses acting on the vessels of the pia mater and the brain.

Two further points may be mentioned as affording additional testimony to the fact that sleep is associated with cerebral anæmia—firstly, in sleeping infants the fontanelle sinks in, an indication that the intracranial pressure is reduced; and secondly, direct observation with the ophthalmoscope shows that the retinal vessels shrink during sleep, or even when yawning (Hughlings Jackson). The fall of general arterial pressure which leads to this cerebral anæmia is well shown in the accompanying diagram (Fig. 2), which is a plethysmographic tracing of the arm of a sleeper who was intentionally subjected to various disturbing influences.

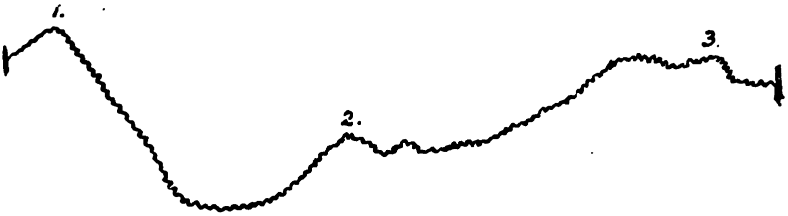

Fig. 2.
(After Howell).

1. Waking the subject, who then falls to sleep again.
2. The observer spoke aloud } without waking
3. The observer walked out of the room } the subject.

It will be seen that the arm swells in sleep and shrinks when the sleeper is disturbed—*i.e.*, during sleep the tone of the vasomotor centre is diminished and the arterial pressure falls.

(*To be continued.*)

ART. X.—*Diphtheria, Scarlatina, and Measles: their Relation and Coincidence.* By JOHN MARSHALL DAY, M.D., D.P.H., Univ. Dub.; L.R.C.P.I.; Medical Superintendent of Cork Street Fever Hospital and House of Recovery, Dublin.

ANYONE who has had charge of scarlatina cases some years ago must have met with that unhappy complication of secondary sore throat which occurred from time to time amongst the convalescents, and which was so often fatal. In the older text-books one will meet reference to such cases. At the present day we know that the cause of such complication was the presence of diphtheria, and that before the introduction of antitoxin it was very fatal.

In latter years I found that from time to time patients sent to our Convalescent Home developed diphtheria, and although we took every precaution we were unable to prevent this accident. I then had swabs taken from the throat of every case which was admitted from other than our own hospital, and we found that, almost invariably, the Klebs-Loeffler bacillus was present, although in some cases the throat did not clinically show such to be the case. I then had swabs taken in twenty consecutive acute cases just as they were admitted to hospital, and before they entered the wards, and we found that the bacilli were present in three-fourths of these cases. I also found that where a severe ulcerated throat was present the report was often negative, the streptococci and staphylococci being so numerous crowded out, as it were, the Klebs-Loeffler bacilli—a fact well known in true diphtheria. If, however, when the throat symptoms got better and the sloughing ceased, a swab was then taken from the red injected throat one nearly always got a positive report.

I also found that it was frequently impossible clinically to say in which case the Klebs-Loeffler bacillus was present and in which it was absent. There is one sign which, in my opinion, is very diagnostic of the presence of Klebs-Loeffler bacilli—namely, enlargement of the glands at the angles of the jaws. (One must always make allowance in estimating such enlargement in children who have most of the glands in the neck enlarged—*i.e.*, tubercular cases.)

One can call to mind many cases in which—although there was no evidence of membrane, only deep congestion and loose mucus in the throat and enlargement of the glands at the angle of the jaw—the swab showed the presence of diphtheria bacilli.

From many observations extending over several years I have come to the conclusion that it is practically impossible, in this city at any rate, to separate cases of pure scarlatina from cases of scarlatina with diphtheria, and we have ceased to try and do so.

Now, our procedure is as follows:—We treat all cases of scarlatina with injections of antitoxin, graduating the dosage according to the clinical condition and age of the patient. By clinical condition I mean the condition of the throat and the condition of the glands.

If one had the ideal hospital—*i.e.*, a separate room for each patient—one might be able to pick out the few cases which do not present the dual disease, but the numbers would be few.

Secondly, we always try, as far as possible, to separate the severe cases from the mild, a most necessary procedure both in scarlatina and measles. Bad throat cases should not be put into a ward with mild cases unless the numbers in the ward be very few.

During the last few months we admitted from a school a large number of young girls suffering from measles. They were all accommodated in a separate pavilion, and mixed with no other cases. Several of them, on admission, had enlarged cervical glands at the angle of the lower jaw, with dark red throats, but no evidence of membrane. On being swabbed we found the Klebs-Loeffler bacilli were present.

The same thing occurred in the case of another institution.

Now, the reason I have for pointing out these facts is that, if the presence of the diphtheria bacilli were not recognised and antitoxin used, then after the patient was discharged, and when all treatment of the throat was stopped, if, as often happens, constipation was permitted to occur, the diphtheria bacilli may become active, and the patient may suffer from diphtheria, or may communicate the disease to others.

These cases were treated as cases of measles and diphtheria, and were segregated until all evidence of both diseases was absent. The patients also were injected with antitoxin shortly before discharge, as I believe by doing so you prevent the development of any stray bacilli that may still be present in the post-nasal passages.

The reason the disease in former years did not develop more often in hospital was that the constant swabbing and cleansing of the throat prevented its active development, and as a general rule it was the mild cases, which were not so carefully swabbed and sprayed, that developed the disease.

One may ask the pertinent question—Why do we not more frequently meet with heart trouble and paralysis in scarlatina? Well, I have frequently seen it, and the reason it was not more frequent is that the second disease—namely, diphtheria—as a rule did not get an opportunity to develop.

In conclusion I may add I would recommend those who have many scarlatina patients to treat to use antitoxin in all cases, to repeat the injection in severe ones, to swab all doubtful cases before discharge, and to give a prophylactic dose a few days before permitting the patient to leave hospital.

These few notes would not have much value were it not for the careful examinations and reports made of the swabs by Professor White, the pathologist to the hospital, to whom I am much indebted for many similar observations.

ART. XI.—*Heartblock and the Conduction of the Cardiac Impulse*[a]*: A Neurogenic Theory.* By WILLIAM PEARSON, M.D., B.Ch., Univ. Dub.

IN the following paper I have not given a complete list of references to the various authorities from whom I have derived my information. I must, however, acknowledge my special indebtedness to the works of Prof. Finny, Gibson, Mackenzie, Gibson and Ritchie, Erlanger, Prof. Aschoff, Keith and

[a] Being a Thesis read for the Degree of Doctor of Medicine in the University of Dublin, June, 1907.

Flack, Hay, Wenckebach, and Morrow in connection with various aspects of the subject.

Heartblock has of recent years become recognised as a definite clinical condition, and has formed a most interesting and fascinating subject for anatomical, physiological, and pathological investigations.

It has been demonstrated graphically by Gibson, Mackenzie, Rihl, Belski, Erlanger, Finkelnburg, Magee Finny, Hay, Wenckebach, and others, so that we may accept without reservation the words of Hay.—" Heartblock is no longer a theory; it is a fact, and has been recognised as such ever since Gaskell published his classical research on the contraction of cardiac muscle."

Let us clearly understand what is meant by the term *heartblock.*—" It is a condition in which the conduction of the normal impulse to contraction from auricles to ventricles is interfered with." I so define it in order to distinguish it from the condition in which there is no failure of the stimulus to reach the ventricle through the auriculo-ventricular junction, but in which a disturbance of contractibility exists, in consequence of which the semilunar valves fail to open. Such a disturbance has been described as the result of a too frequent heart action, the ventricular musculature having, as we know from physiology, a very long " refractory period." The first thought that occurs to one as an immediate deduction from this is " why does not every case of tachycardia result also in arrhythmia?" But into this I shall not enter.

Bradycardia, which seems by some to be confused with *heartblock* and *arrhythmia,* is well defined by Gibson as " infrequent beating of the heart." Its definition in Clifford Allbutt's " System of Medicine " as " a superfine name to denote slow pulse, but which connotes nothing," may be dismissed as not worthy of consideration.

Gaskell describes as the functions of cardiac muscle, rhythmicity, excitability, contractility, conductivity, and tonicity, and *arrhythmia* may be defined as a disturbance of these functions.

With a clear understanding of these terms we find that what is termed by some authors *Stokes-Adams disease* is more correctly designated a *syndrome*, or group of symptoms, recognised clinically as (1) bradycardia; (2) cerebral attacks, either simulating *petit mal*, *grand mal*, or apoplectiform seizures; (3) visible impulses in the great veins of the neck, generally supposed to be auricular in origin.

My interest in this subject was awakened by a case which was under the care of Dr. J. Magee Finny in Sir Patrick Dun's Hospital in the years 1905 and 1906. This case was reported to the Royal Academy of Medicine in Ireland on Friday, March 30, 1906. Professor Finny's paper appeared in the number of this Journal for May of that year (Vol. CXXI., p. 321).

The patient, Mrs. J. M'N., aged 42 years, married, was admitted to hospital on June 19, 1905, complaining of frequent "weak turns" or "fits."

On Feb. 28, 1906, Dr. Finny admitted the patient for the second time for the purpose of making further observations on the epileptiform attacks, and obtaining more sphygmographic tracings. I was then fortunate enough to be acting as his clinical clerk, and made the following notes of the case:—

March 2nd.—The radial pulse, taken on March 1st at 10 a.m., was regular, full, of good tension, and numbered 26 beats per minute. It corresponded with the frequency of the heart, and its rate was unaffected by change of posture. This loss of postural influence over the frequency is worthy of note, and is not uncommonly observed in cases of complete heartblock. It depends upon the fact that the vagi have almost entirely lost their influence over the ventricles.

The heart's impulse was seen to be widely diffused. It was slow and deliberate in character, being first apparent over the auricular region to the left of the sternum, and gradually passed downwards over the ventricles to the position of the normal apex-beat. This slow movement was reminiscent of a wave of peristalsis moving along the intestine beneath a thin abdominal wall. Pulsations were also observed in the great veins of the neck, exhibiting a 3 : 1 rhythm as compared with the ventricular contractions.

This is remarkable, because by X-ray examination a few days previously the auricular and ventricular contractions followed one another in regular sequence, and it suggests the possibility of a separate and independent *block* existing at the junction of the sinus venosus and the auricle. Such a block has been demonstrated lately in a case recorded by Gibson and Ritchie, to which I shall refer in more detail afterwards.

The urine was clear, amber-coloured, with a slight deposit of mucus acid in reaction, sp. gr. 1020, and contained a faint trace of albumen. It did not in any way suggest nephritis.

After her dinner, at 12 30 p.m., she was proceeding with a nurse from one ward to another for the purpose of having her weight registered, when suddenly—without any warning or cry—she collapsed on her knees and fell to the ground in a heap. Her muscles were completely relaxed. The house surgeon was instantly summoned, and found her deeply cyanosed, pulseless at the wrist, and showing no evidence of respiration beyond one feeble gasp. He thought she was dead, but immediately injected ♏vii. of liq. strychninæ and employed artificial respiration, leaving her lying with a pillow under her head, and having hot bottles placed to her feet. She made no attempt to respire for a space of about four minutes, but on auscultation the heart was heard to flutter feebly. Oxygen inhalations were employed, and after a time the heart began to beat feebly again, and respirations of a stertorous character were resumed, accompanied by slight frothing at the mouth. After seven minutes from the onset the radial pulse was again palpable, and numbered 40 per minute.

Patient was then carried back to bed, and immediately started to moan and cry. Her arms were folded across her chest in a tonic spasm, the axial muscles were terribly convulsed, while marked trismus and opisthotonos were present, and urine was voided under her. External strabismus was observed in both eyes, and the pupils were widely dilated.

Chloroform inhalations were employed till the pupils contracted to pinhole size. The heart reached 56 beats per minute, while the respirations assumed a modified Cheyne-Stokes character (*Biot's respiration*)—the respiratory rhythm showed a period of 70 seconds duration in which respirations occurred, followed by a period of 25 seconds of complete apnœa, but the onset and cessation of respirations were quite sudden, the first and last breaths taken being of equal amplitude with the others. The pulse gradually sank to 40 per minute, and the chloroform inhalations were stopped. About an hour from the onset the knee-jerk and conjunctival reflexes were obtainable, but the pupils were again widely dilated. At 2 30 p.m. (1 hour 40 minutes from the onset) the attack passed off, and the patient fell asleep. She awoke at 4 p.m., and was given potass. brom. grs. xxv., and had three attacks of vomiting. Her pulse and respirations were then synchronous, numbering 28 beats per minute.

The following morning, March 2nd, the patient was quite calm, but had no knowledge of the previous day's attack. She stated when asked that she had not left her bed at all the day before, and had not been sick in her stomach. Her pulse was regular, 38 beats per minute, and two sphygmographic tracings were made, one in the recumbent position and the other as patient sat up. They were equal in frequency, exhibiting a short, sharp, line of ascent, followed by a prolonged and gradual descent which showed a number of faint vibrations following the aortic wave.

March 3rd.—Patient complained of headache in the right temporo-parietal regions. The radial pulse numbered 22 per minute, and a few minutes later 32 per minute. It was weak and somewhat irregular.

March 4th.—Patient had several seizures of varying severity during the morning and forenoon. In one of them the pulse was observed to beat 140 per minute for a short time. In the afternoon a very severe attack came on at 4 p.m., and lasted four and a quarter hours. Cries and shrieks were emitted, convulsive spasms and opisthotonos occurred, while at times strabismus and Cheyne-Stokes, or Biot's type of, respiration was present, and the pupils were widely dilated. Chloroform was freely administered, and occasionally artificial respiration had to be employed.

The whole attack closely resembled that which occurred on the 1st inst.; it was of a milder character, but lasted much longer. At one period of it, on auscultation, I counted the usual frequency of 24 beats per minute, when suddenly the rate increased to about 150, and maintained this rate for twenty seconds, when it again suddenly fell to 24 per minute.

March 5th.—Two attacks of vomiting and six minor seizures occurred. The pulse-rate varied throughout the day from 26 to 32 per minute.

March 6th.—In the morning three "fits" occurred. The last of these was at 9 30 a.m., and patient died almost immediately it set in.

No autopsy was obtained.

In the above record of this case I have not attempted to give a detailed account of all the variations which were observed clinically in the heart from day to day, as I wish more specially to criticise our knowledge of the physiology and pathology of the conduction of the cardiac impulse and rhythm; and to see if it will afford an adequate explanation of the clinical phenomena of heartblock.

The work of Gaskell, in 1883, on the heart of the tortoise, resulted in a myogenic theory of the cardiac impulse being formulated, which has since held the field.

It also rendered probable the existence of a muscular connection between the auricles and ventricles in the mammalian heart, and such was demonstrated by W. His in 1893.

This auriculo-ventricular band of fibres has since then been associated with his name; but last year, 1906, it received close attention at the hands of a Japanese named Tawara, working under Prof. Aschoff, and in England from Keith and Flack. By laborious dissections these workers have shown the bundle to be not a mere connecting link between the auricles and the ventricles, as a coupling stretches between two railway trucks, but a system of fibres which ramify throughout all parts of the ventricular walls, the musculi papillares receiving a particularly rich share of them. The fibres composing the ramifications are of the Purkinje type. They are pale in colour, being rich in vacuolated protoplasm, and the cortical substance alone being fibrillated, while they are isolated by special fibrous sheaths until they terminate in the ordinary musculature.

Tawara regarded these fibres as being a *conducting*, and not a *contracting*, system, and until he formulated his theory their significance was not understood. He further observed that these fibres did not hypertrophy or atrophy when such changes occurred in the heart itself, and Keith and Flack have confirmed this.

What evidence have we of the influence of this bundle in controlling the cardiac rhythm ?

Erlanger, in 1905, devised a clamp by means of which the auriculo-ventricular bundle could be subjected to varying degrees of pressure, while preserving its normal relations to the organism. He experimented on dogs' hearts, and obtained every degree of heartblock in this manner :—

1. With very slight pressure on the bundle, a lengthening of the intersystolic period (that is, the latent period between an auricular systole and its succeeding ventricular contraction) was observed.

The successive intersystolic periods lengthened, however, until finally the ventricles failed to respond to one of the auricular contractions. The rest thus afforded the ventricular muscle enabled it to respond quickly to the next auricular impulse, and again the intersystolic period progressively lengthened until the ventricles dropped another systole. Such ventricular silences were obtained with every tenth, ninth, eighth, and so on down to every second auricular contraction.

2. By greater compression, a ventricular contraction was only obtained after every three, four, or more auricular beats, giving a 3 : 1, 4 : 1, &c., rhythm. These different rhythms are all degrees of what is termed *partial heartblock.*

3. Total destruction of the auriculo-ventricular band resulted in *complete heartblock*—that is, the auricular and ventricular beats occurred quite independently of one another, though, as Erlanger has pointed out, heartblock may be "complete," and yet the frequencies of the auricular and ventricular systoles bear a definite and constant ratio to one another, or may even be identical. This apparent paradox is due to the fact that the ventricles possess an individual and independent rate of contraction of their own, which varies from 23 to 28 beats per minute. By modifying the rate of contraction of the auricles we can therefore produce what appears to be a different type of heartblock, or actually remove all evidence of any block existing.

Experimentally, then, it can be demonstrated that the auriculo-ventricular band has a profound influence over the cardiac rhythm, and that injury to it affects the conductivity in such a manner as to produce typical heartblock.

Arguing from these facts, we might reasonably expect to find that in clinical cases of heartblock pathological conditions existed in the bundle.

Gibson has shown, in at least two cases, that an increase of fibrous tissue had occurred. In one case the individual fibres were surrounded by an excessive amount of fibrous sheath, and the muscle itself appeared somewhat paler than normal. In the other, the bundle was found to pass into a mass of fibrous tissue.

Keith found, in a case of Sir James Barr's, that over half the bundle had been reduced to fibrous tissue, and the neighbouring arteries showed irregular patches of thickening.

In a case of Hay's, Keith and Flack found "the bundle was partially obliterated at the point at which it perforated the central fibrous body of the heart," and in another case (Grünbaum's) they found it "involved within a gumma of the septum."

In two cases of Mackenzie's they found the bundle "largely replaced by fibrous tissue."

Stengel discovered, at a *post-mortem* on a case of Stokes-Adams syndrome, an atheromatous patch on the left side extending over the bundle of His.

Changes have also been described by Schmoll, Cooper, Jellick, Ophuls, and Harford.

The large majority of the cases examined, then, have shown a fibrosis of the auriculo-ventricular band, with or without atheromatous changes in the coronary arteries. In some of them the vagi have been reported as perfectly healthy; in other cases their condition does not seem to have been investigated.

It may, therefore, be taken as proved that a lesion in the band of His is capable of producing heartblock, but there are undoubtedly other factors which can also upset the normal cardiac rhythm. The most important of these are the vagi nerves.

Hering and Rihl have reported a case in which pressure on the vagi in the neck caused a temporary heartblock.

Mackenzie has shown that a partial or even a complete heartblock may be established by vagus stimulation by the administration of digitalin. This block has been proved by von Tabora to be due partly to vagal stimulation and partly to a direct action on the band of His, whereby its conductivity is lowered. In a previously healthy bundle *partial heartblock* only occurs, but in association with pathological changes *complete heartblock* is established. Knoll also succeeded in producing a block by the use of heleborein.

Mackenzie has proved too that vagal stimulation affects the conductivity of the auriculo-ventricular bundle. The act of deglutition changed a condition of impaired conductivity into one of transient heartblock.

We have, I think, evidence of abnormal nervous influence existing in Prof. Finny's case. I refer to the very sudden and marked changes in the frequency of the heart which occurred during two of the seizures on March 4th. In one the pulse-rate rose to 140 per minute for a short time; in another, while auscultating, I observed a sudden increase from 24 to 150 beats per minute, which only lasted for 20 seconds, and then fell again to 24 per minute. It is only by some profound derangement of the highly sensitive nervous system that such remarkable variations could occur; the physiology of muscle shows it to be too stable and well-ordered a member of the organism to give way to such sudden outbreaks of violence.

In a recent publication on "Further Observations on Heartblock," by Gibson and Ritchie, in the *Practitioner* for May, 1907, the authors describe an experiment which they employed to determine, if possible, whether alterations in structure of the auriculo-ventricular band alone, or dromotropic influence of the vagus entirely or partly, accounted for the dissociation of the ventricular from the auricular rhythm. By the injection of $\frac{1}{36}$ gr. of atropin they succeeded in entirely removing a complete heartblock within three minutes, but found that the conductivity of the bundle of His still remained lower than normal. That this was so they learned by observing that the interval between the auricular and ventricular pulsations was equal to 0.6 secs., whereas it is only 0.2 secs. in health. The complete block lasted for over a period of fifteen minutes, being again succeeded by a period of partial block, and finally complete block was re-established within an hour of the time of administration.

Owing to the fact that such marked improvement occurred in the conductivity of the auriculo-ventricular band, they conclude that the heartblock was in this case due partly at least to negative dromotropic vagal influence. In this conclusion I think they are justified, but I cannot see why they should be "confident in asserting that, in addition, there must have been some structural alteration in the auriculo-ventricular bundle," because the heartblock had persisted for several months. Would structural alteration (such as a fibrosis) which had existed for some time in the vagi render them immune to the influence of atropin ? Unless this is proved, I cannot see why we may not assume that such a pathological condition could conceivably give rise to a heartblock of several months' duration, even with an auriculo-ventricular bundle of unimpaired integrity. I admit that their deduction is probable, but they have not proved it.

A most interesting and remarkable point in the same case was a demonstration, obtained by graphic records, of a diminution of conductivity in the muscular fibres passing from the superior vena cava to the right auricle. There can be no doubt from the work of Hering that a block can exist between the veins and the auricle of the mammalian heart, which is comparable to that obtained in the classical Stannius' experiment on the frog's heart, and shown by Gaskell in the heart of the tortoise; and from Gibson's and Ritchie's observations in this case we have had proved, I think, an exactly analogous condition to hold good for the human heart. This brings the mammalian, and more particularly the human, heart into still closer relationship with the amphibian heart, both from an anatomical and a physiological standpoint.

Now, we know that in the frog's heart there is situated between the sinus and the right auricle a nerve ganglion called Remak's ganglion, and another called Bidder's ganglion at the auriculo-ventricular junction. The ligatures employed in Stannius' experiment are applied at these points, and I do not think we are justified in assuming that the resulting blocks are due to injury or division of the muscular connections which also exist there. Surely the presence of these ganglia is sufficient in itself to strongly suggest their importance in connection with the conduction of the cardiac impulse. In other words, I am inclined to think that the conduction of the cardiac impulse is by means of nerve elements and not by muscle, that it is *neurogenic*, and not *myogenic*, in the case of the frog's heart.

But I have just shown what a close analogy exists between the anatomical and physiological conditions which obtain in the mammalian and amphibian hearts, in the light of recent investigations on the subject of heartblock. And I must not forget to state that in this auriculo-ventricular bundle of His both nerve fibres and nerve ganglia have been proved to exist. Therefore, I believe that the cardiac impulse in the human heart is "neurogenic" and not "myogenic" in origin; and I think it highly probable that there will be found, in the embryological junction between the venæ cavæ and the right auricle, a rich supply both of nerve fibres and nerve ganglia, so that we shall have the homologues of Remak's and Bidder's ganglia of the frog.

Further, I believe that it is the nervous elements in the auriculo-ventricular bundle which are the controlling agents of the cardiac rhythm, and that it is by their involvement in lesions affecting the bundle that the rhythm is thrown out of gear and heartblock induced. As in the intestine, the conduction of peristaltic movements is governed by the local reflex nervous mechanism of Auerbach's plexus, so here I think we may find a parallel in the functions of the auriculo-ventricular nerve cells and nerve fibres.

I have quoted evidence to show that the rhythm can be affected by agents which act on the vagi nerves—either *mechanical*, such as pressure, or *chemical*, such as digitalin and heleborein.

That a diseased condition of the blood-vessels in the floor of the fourth ventricle, such as a sclerosis or atheromatous changes, is capable of also affecting the rhythm, by producing secondary changes in the vagal centres, I think is probable, but I do not intend to touch upon it.

On the whole, I think that heartblock may be attributed to causes which may exist at different levels of the nervous mechanism, but which are always essentially *nervous*; by which I mean, that it is the involvement of nervous elements which is the predominant determining factor.

ART. XI.—*What are the Eosinophile Cells?* A Preliminary Note by FRIEDRICH FREYTAG, Dr. med. vet. et phil., of Hanover.

WHILE engaged in examining the blood of rabbits after splenectomy with the view of determining its condition as regards the presence of erythrocytes and hæmoglobin, I found an increase of these constituents in the first instance, and later on a diminution.[a]

This diminution of red blood cells and hæmoglobin led me to investigate the iron-content of organs, such as the liver, and so on,[b] and of the lymphatic glands taking the place of the spleen.[c]

After splenectomy the eosinophile cells are increased in the lymphatic glands. They become larger, and then form pigment-cells. The liver also contains less iron. Therefore the lymphatic glands (hæmal glands) must form depôts capable of retaining the iron of the blood.

Before some weeks had as yet elapsed after operation there were many cells (pigment and eosinophile) in the lymphatic glands. I supposed that the pigment and eosinophile cells contained iron. I found leucocytes containing red corpuscles, then leucocytes with granulations, leucocytes in the act of constructing eosinophile cells, and giant eosinophile cells—I call them pigment cells. I employed several methods—that of Foà, and also others—to prove the presence of iron in the cells. The examination gave positive results. Therefore, I conclude that the eosinophile cells are leucocytes which contain iron taken up from erythrocytes. The eosinophile cells afterwards become pigment-cells. The granulations of the eosinophile cells are the visible expression of their iron-content.

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[a] Les modifications du sang après la splenectomie. *Journal de Méd. vet. et de zool.* 1905. P. 408.

[b] Der Eisengehalt der Milz und seine Beziehungen zum Blut. *Berliner tieraerztliche Wochenschrift.* N. 26. 1907.

[c] Milza e depurazione del sangue sostituzione della milza con le glandole linfatiche. *Giornale internazionale delle Scienze mediche,* 1905. Vol. 12.

INDIGO-CARMINE IN THE DIAGNOSIS OF THE KIDNEY FUNCTION.

In the *Correspondenz-Blatt für schweizer Aerzte* of August 1, 1907, Dr. F. Suter reports thirty-seven cases of unilateral kidney disease in which the indigo-carmine test was employed before operation in order to ascertain which kidney was diseased and whether the functional capacity of the other was sufficient to carry on the vital functions. After an intramuscular injection of four c.c. of a four per cent. solution of indigo-carmine, the bladder was washed with a solution of boric acid, and a Luys segregator introduced. The urine from the kidneys was collected simultaneously for twenty or thirty minutes, this being necessary, as only comparative values have any significance. In individuals with healthy kidneys, ten to twelve minutes elapsed before the excretion of coloured urine began. In Suter's series of thirty-seven cases he always found it safe to remove the one kidney when the indigo-carmine had begun to be excreted in ten to twelve minutes by the other. The greater or less intensity of the blue was also found of value when the urines of the two sides were compared; a deep blue colour was a sure sign that the kidney was healthy, but when the urine was of light blue colour he depended more on the time which elapsed before any coloured urine was excreted.—*Medical Record*, New York, September 7, 1907.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON MIDWIFERY.

1. *A Text-book of the Science and Art of Obstetrics.* By HENRY J. GARRIGUES, A.M., M.D.; Professor of Obstetrics in the Post-graduate School and Hospital (resigned), New York, &c. Second Edition, thoroughly revised. Philadelphia and London: J. B. Lippincott Company. Royal 8vo. Pp. 750. With 525 Illustrations.
2. *Manual of Midwifery.* By W. E. FOTHERGILL, M.A., B.Sc., M.D.; Lecturer in Obstetrics, the Victoria University of Manchester, &c. Fourth Edition. Edinburgh and London: William Green & Sons. 1907. Cr. 8vo. Pp. 508. With double coloured Plate; 103 Illustrations in the text.
3. *A Course of Lectures to Midwives and Maternity Nurses.* By W. E. FOTHERGILL, M.A., B.Sc., M.D.; Lecturer in Obstetrics, Victoria University, Manchester, &c., &c. Pp. 260 and x. With 67 Illustrations in the text. Edinburgh: William Green & Sons. 1907.

1. THE second edition of Dr. Garrigues' work on obstetrics claims to have been thoroughly revised. Many new illustrations have been substituted for old ones. Vaginal Cæsarean section has been fully discussed, and so has the question of toxæmia of pregnancy. "The American evolution of the incubator has taken the place of the original French model." This sentence we place in inverted commas, because it is copied directly from Dr. Garrigues' *preface.* It is quite true that a different pattern of incubator has been described in this edition from that (Tarnier's) described in the first edition, but to term the pattern described in the present edition an

"American evolution" is nothing short of a gross misstatement of fact. So far as one can judge from the illustration, it is in every respect identical with the incubator which the writer of this review brought to Ireland from France in the year 1897, which was devised by M. Lèon, who lived, so far as we remember, at Marseilles, and which has been since that time in use in the Rotunda Hospital. If Dr. Garrigues desires to ascertain how he comes to imagine that this incubator is an "American evolution" perhaps Dr. de Lee, of Chicago, can explain the origin of the delusion. So far as we can judge from the latter gentleman's own writings, he desires to pose, and allows other writers to represent him, as the parent of the "American evolution." The exact extent to which he is entitled to such a position is, doubtless, known to him as well as it is known to M. Lèon—if he is alive—and to the writer of this review.

On a former occasion we reviewed the first edition of this work at considerable length, and, as a whole, did not regard it as a noteworthy addition to obstetrical literature. We cannot see anything in the present edition to induce us to alter our opinions.

2. IN his new—the fourth—edition, Dr. Fothergill has included a considerable amount of fresh matter. Several sections have been re-written, the whole text carefully revised, and a number of new illustrations introduced.

We have on several occasions criticised adversely the manner in which the treatment of *ante-partum* hæmorrhages has been discussed in this book. In our review of the third edition we wrote:—

> "Will Dr. Fothergill during the course of one evening put all preconceived ideas regarding the correct treatment of placenta prævia and accidental hæmorrhage out of his mind, and will he devote the time thus gained to the tabulation—first, of the statistics of the results of the treatment of these conditions advocated in Edinburgh and London; and, secondly, to a tabulation of the statistics of the Dublin treatment? Let him then compare his tables, and we incline to the belief that

in the preparation of his fourth edition he will be able to write clearly and definitely, and give reasons for the faith that is in him."

We are sorry to see that Dr. Fothergill has taken no notice of the suggestion, and that in the present edition the description of the treatment of this serious complication of labour remains as unsatisfactory as it was in the third edition.

Much of Dr. Fothergill's book is excellent, but parts of it want complete revision. We have, however, seen these very parts reproduced from new edition to new edition, and, therefore, there is now little hope that they will be altered, as it is evident that they meet with the approval of the author.

3. DR. FOTHERGILL'S "Lectures to Midwives and Maternity Nurses" seem to us to be in many ways a better example of their class than is his "Manual of Midwifery" of its class. They are concisely and clearly written, and, though they will not take the place of a systematic work on midwifery for nurses, they form a very valuable adjunct to such a work. We note, however, one serious omission. There is apparently no lecture which deals with abdominal palpation. This should be rectified in the next edition.

Dr. Fothergill hankers after rupture of the membranes in external accidental hæmorrhage, and yet he tells nurses that they are to do no such thing. Surely rupture of the membranes is a procedure which is simple enough to be carried out by a nurse, and surely it is equally efficacious whether it is effected by the male or the female fingers. If it is good treatment to be adopted by a medical man, who, presumably, can adopt more complicated treatment if it is necessary, surely it is good treatment to be adopted by a nurse who cannot adopt more complicated treatment. Why, therefore, is it forbidden? We need not say that we thoroughly agree with Dr. Fothergill's prohibition, but then we regard rupture of the membranes as unsuitable treatment for either doctor or nurse to adopt.

RECENT WORKS ON PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

1. *Uric Acid: An Epitome of the Subject.* By A. HAIG, M.D. Second Edition. J. & A. Churchill. 1906.
2. *The Chemistry, Physiology, and Pathology of Uric Acid: With a Discussion of the Metabolism of Gout.* By F. H. M'CRUDDEN. New York: P. Hoeber.
3. *Clinical Pathology, being a Discussion of General Pathology from the standpoint of the Chemical Processes involved.* By H. G. WELLS, M.D. Philadelphia and London: W. B. Saunders Co. 1907. Pp. 549.
4. *Diabetes Mellitus: Its Pathological Chemistry and Treatment.* By DR. CARL V. NOORDEN. Bristol: J. Wright & Co. 1906. Pp. 211.
5. *Metabolism and Practical Medicine.* By C. V. NOORDEN. English Issue under the editorship of I. WALKER HALL. London: W. Heinemann. 1907. Vol. I. *The Physiology of Metabolism.* By A. MAGNUS-LEVY. Pp. 452. Vol. II. *The Pathology of Metabolism.* By C. V. NOORDEN, F. KRAUS, A. SCHMIDT, W. WEINTRAND, M. MATTHES, and H. STRAUSS. Pp. 525.
6. *The Elements of the Science of Nutrition.* By GRAHAM LUSK, Ph.D., F.R.S. (Edin.). W. B. Saunders Co. 1906. Pp. 326.
7. *Practical Physiological Chemistry.* By J. A. MILROY, M.D., and T. H. MILROY, M.D., F.R.S.E.; Professor of Physiology, Queen's College, Belfast. Second Edition. W. Green & Sons. 1907. Pp. 201.
8. *The Essentials of Chemical Physiology.* For the Use of Students. By W. D. HALLIBURTON, M.D., LL.D., F.R.S.; Fellow of the Royal College of Physicians; Professor of Physiology in King's College, London. Sixth Edition. London: Longmans, Green & Co. 1907. 8vo. Pp. xi + 258.

1. THE literature of uric acid is appalling, and still goes on unceasingly, in witness whereof we have the two books

under review. Yet it is doubtful if we really know much more about it clinically than we did twenty or thirty years ago. Dr. Haig, however, is very positive that he knows all about it, and he is inclined to be half sorry, half vexed, for those benighted folk who cannot see eye to eye with him. In order to bring forward his views in a more accessible and concise form than that presented in his larger works he has prepared a condensed epitome of the subject, and he is plainly more than ever convinced—lucky man—of the impregnability of his position.

The key-note to Dr. Haig's practice is embodied in the amazing statement (page 141) that "there is no real cause to doubt that man is essentially a frugivorous animal, and that the foods natural (*sic!*) to a frugivorous animal are those which suit him best." It is difficult to take the book seriously. Dr. Haig evidently writes in good faith and sincerity, but surely he is carried away by his desire to convert his readers, and he is "intoxicated with the exuberance of his own verbosity." No difficulties affright him, and, to his mind, uric acid is the master-key which unlocks all the puzzles which torment less enlightened folk.

The book amusingly concludes with the gloomy prophecy that the truth of his uric acid theory, now in its dawn, will, he cannot doubt, be eventually recognised, "but the noonday light may come in some catastrophe of national inefficiency and degeneration when, for practical purposes, it may be too late. It will then be an arid consolation to know that the voice of warning was raised though it passed unheeded by the many."!!

2. DR. M'CRUDDEN's book is of an entirely different stamp, and may be commended as one of considerable value for reference.

For some years he has made a special study of metabolism in certain diseases, especially those commonly accredited to rheumatism and gout. "The results of this study led to the conclusion that rheumatic diseases and uric acid metabolism do not, at the present time (1905) seem to be closely related."

The author has endeavoured to thoroughly study the entire field of the chemistry, physiology, and pathology of uric acid and the purin bodies, and he has contributed some original observations which are embodied in the present volume.

The chemistry of the purin bodies, including uric acid, is exhaustively discussed, and the bibliography throughout the book is full and satisfactory. In regard to experiments on the effect of drugs upon the excretion of uric acid, he arrives at the disappointing conclusion that "there is no drug which we can say either decreases the formation of uric acid, furthers its excretion, hastens its further oxidation, or increases its solubility in the blood or tissue fluids."

He brushes aside—rightly we think—Haig's work as uncritical and devoid of practical value, because it is based upon unproved assumptions, faulty logic, and inaccurate experiments.

The book is one of real importance, and should be consulted by all who are interested in the clinical and scientific study of gout and rheumatism.

3. No educated physician can afford to ignore the applications of physiological chemistry to the science and practice of his profession. Yet the field is such an extensive and rapidly widening one that it is difficult to keep it within view, and to follow, even superficially, its outlines.

Dr. Wells' book appears at an opportune time, and will, we anticipate, find a wide circle of readers. The subjects discussed are so many and various that a detailed review is scarcely possible, and the objection might possibly be raised that too much has been attempted. We can do little more than invite attention to the volume, and assure our readers that it is full of interest and instruction, and that no one will regret purchasing it.

In regard to such subjects as gout, diabetes, and gastro-intestinal putrefaction, which are abundantly treated in available monographs at greater length than the scope of this work permits, the author has judiciously contented himself with summarising the most recent views and advances. The book worthily fills a space in medical literature, and constitutes a valuable addition to the library alike of the pathologist and the clinical physician, whose labours it correlates and illumines.

An elementary knowledge of organic and physiological chemistry is assumed on the part of the reader, yet, in order to place him abreast of modern work, the earlier chapters give an excellent epitome of such fundamental topics as the chemistry and physics of the cell, and the nature and action of enzymes. Chapter XII. treats in an interesting way the important subject of œdema, for which we cannot bring ourselves to adopt the inelegant spelling—edema—used by the author. Chemistry has as yet failed to throw much light upon the vexed problems of tumour pathology, still the reader will find much to attract him in the careful summary given in Chapter XVII.

In regard to the common form of degeneration known by the inappropriate and misleading term "amyloid," the author suggests the term "chondroid," which fitly indicates the closer relationship of the curious substance to chondrin.

The cause of the green colour observed on the body of a corpse is ascribed to the formation of *sulphur-methæmoglobin* produced by interaction of H_2S with oxyhæmoglobin.

4. For some time past Dr. v. Noorden has been publishing a series of clinical treatises upon Disorders of Metabolism and Nutrition, and this volume forms No. 7 of the series. The preceding volumes dealt with Obesity, Nephritis, Colitis, Acid Auto-intoxications, Saline Therapy, and Drink-restriction (thirst cures).

Few, if any, living physicians have so wide a grip of physiology, chemistry, and pathology, coupled with an enormous clinical experience, as Professor v. Noorden, and hence he speaks with special authority. His labours have done much to establish the practice of medicine upon a sound and scientific basis, and his literary style is so convincing and forcible that his essays are exceptionally attractive and stimulating.

According to the author, the fundamental fault in a diabetic subject is the loss of capacity of the organs—liver and muscles—to form and store up glycogen, and this incapacity accounts for most of the peculiarities of diabetic glycosuria.

In severe cases of the disease there is reason to believe that the organism is capable of making use of fat to form sugar. The correct principle for rational dietetic treatment is to ascertain by individual experiment the limits of toleration for carbohydrate foods, so as to reduce the glycosuria to a minimum with the least possible harm to the patient. V. Noorden divides the foods into two groups:—

(1) Principal articles of diet—

These include substances which are practically free from carbohydrates. Foods and drinks of this group form the basis of three meals of the day.

(2) Accessory articles of diet—

These include substances which contain carbohydrates. Details are given of a standard test-diet, and at the end of the book are appended three instructive and practical food tables.

Table I. includes the foods which may be consumed by all diabetics.

Table II., those foods which contain a very small, but still demonstrable, quantity of carbohydrates.

Table III. contains foods which are rich in carbohydrates. They cannot be used during a rigid dietary.

It will appear from the above remarks what a helpful book Professor v. Noorden has written, and we heartily commend it to every practitioner.

5. THIS monumental work represents the English rendering of the second edition of C. v. Noorden's well-known "Text-book of Metabolism," and Dr. Walker Hall has done well in editing it, and placing it before the profession. The present text is mainly due to the co-operation of a number of workers in this branch of medical science,

and the net result constitutes a veritable cyclopædia of metabolism which is worthy of the extent and importance of the subject. Two bulky volumes are before us, to be followed by a third, which will, we believe, deal with the clinical data.

Vol. I. treats of the metabolism of normal physiology, and gives a masterly and critical account of the energy-exchanges of the body.

Vol. II. deals with the pathology of metabolism—*e.g.*, hunger and starvation, fever and infection, and the diseases of the blood, the digestive, respiratory, and other systems of the body.

It would serve no useful purpose, and, indeed, be impracticable, to enter into a detailed review. Suffice it to say that the entire work is a perfect mine of information, supplied by expert authorities, which will be welcomed by all scientific physicians as a trustworthy guide and a stimulating source of investigation.

The bibliography is carefully handled (*e.g.*, ten pages on metabolism in diseases of the blood), and we now have, for the first time in English, a comprehensive and scholarly exposition of the chemical interchanges that unceasingly go on in the organism.

As a sample of the valuable practical information that may be gleaned from its pages we will quote the terse conclusions arrived at by Dr. Magnus-Levy in regard to the highly important and vexed question as to the food value of alcohol:—

"Alcohol can, therefore, replace equivalent quantities of carbohydrates or fats if the supply of these be insufficient—that is to say, can protect them from oxidation. If it is added to a diet that is sufficient, fat or glycogen are stored. From this it is seen that the significance of alcohol as a means of sparing other food-stuffs has been definitely proved." (Vol. I., p. 350.)

6. ON a much smaller scale Dr. Lusk's book covers some of the same ground as v. Noorden's colossal work, and its aim is to review the scientific substratum upon which rests the knowledge of nutrition both in health and disease.

The style is somewhat snappy and disjointed, and the book is, to our thinking, lacking in critical sifting of the multitudinous and conflicting observations and experiments which encumber the broad subject of metabolism.

In the discussion of the pathology of gout the author arrives at the barren surmise "that present-day doctrines concerning metabolism in gout may shortly become obsolete through new and far-reaching discoveries." Certain it is that we even now know but little of the intimate nature of gout.

7. OF the many Manuals of Practical Physiological Chemistry which are in existence there is none better than the one under notice, which has reached its second edition, and we can warmly recommend it to our readers as a reliable text-book. It runs on the usual lines, is clearly written, and is singularly free from misprints. On page 2, however, the formula of hydrochloric acid is twice printed as HCL. Any student who has carefully worked through the course prescribed in this book could not fail to have acquired a satisfactory elementary knowledge of physiological chemistry.

8. THE third edition of Professor Halliburton's excellent book was reviewed in the number of this Journal for July, 1899 (Vol. CVIII., page 46). Since that time two other editions have been exhausted, and now the sixth edition appears.

The author tells us that he has again subjected the book to a thorough revision. In the large text many parts have been re-written with the object of putting the reader in possession of facts connected with increased knowledge of the proteins and of the way in which they are utilised in the body. The sections relating to blood coagulation and to respiration have been much amplified in order to include many facts based on recent research.

The difficult but interesting subject of protein metabolism is discussed at page 30 in such a way as to make it quite intelligible to the student. Emil Fischer's views on the food proteins and their cleavage products formed in the process of digestion are adopted by the author, who gives a singularly lucid explanation of the formation of the so-called *amino-acids* from the fatty acids by the substitution for one of the hydrogen atoms in such an acid by the combination of NH_2, which is called the *amino-group.*

"If we take acetic acid, which is one of the simplest of the fatty acids, we see that its formula is

"$CH_3.COOH$.

"If one of the three hydrogen atoms in the CH_3 group is replaced by NH_2 we get a substance which has the formula

"$CH_2NH_2.COOH$.

"The combination NH_2 which has stepped in is called the *amino-group*, and the new substance now formed is called *amino-acetic acid*; it is also termed **glycine** or glycocoll." (Page 31.)

There are upwards of eighty illustrations in Professor Halliburton's work, which we cordially recommend as one of the best and cheapest guides in the English language to a knowledge of chemical physiology.

Physical Diagnosis. By HOWARD S. ANDERS, A.M., M.D. London: Sidney Appleton. 1907. 8vo. Pp. xix + 456.

THIS book is an excellent one. The author's object is to impress on students and practitioners the importance of systematic physical examination of patients which he considers, and rightly too, is not sufficiently attended to in practice. Now that chemical and pathological examinations are so readily carried out and the results are looked on so much as proof positive one way or the other in a diagnosis, less care is used in eliciting symptoms and physical signs and less attention paid to the lessons to be learned therefrom.

Some 400 pages of the book the author devotes to the examination of the thorax and abdomen in so far as it can be made by the physician's unaided senses. The normal and the abnormalities to be found in these regions on inspection and palpation, on percussion and auscultation, are systematically and exhaustively described, and instructively, too, as far as written description can replace clinical instruction at the bedside. The cause as well as the nature of physical signs is shown, so that with an even moderate knowledge of pathology the student is given ample assistance in the exercise of his powers of deductive reasoning.

The text is supplemented by a number of plates and by a large number of useful diagrammatic and semi-diagrammatic illustrations.

The last portion of the book, by G. E. Pfahler, M.D., is devoted to the uses of Röntgen Rays in medical diagnosis, and comes perhaps fairly within the scope of the work.

Altogether the book is a distinctly good one, useful and readable.

A Dictionary of Medical Diagnosis. By HENRY LAWRENCE MCKISACK, M.D., M.R.C.P. Lond.; Physician to the Royal Victoria Hospital, Belfast. London: Baillière, Tindall & Cox. 1907. Demy 8vo. Pp. xii + 583.

THE dictionary plan of medical bibliography is not, as a rule, one to be commended. It lends itself too often to needless repetition, and its definitions and explanations are often too brief to give adequate information.

The above volume, however, is no mere compilation of definitions, but contains much useful information, being evidently, for the most part, as the preface tells us, "the embodiment of notes made by the author on the significance of the various morbid phenomena, considered strictly from the observer's point of view."

The plan of the book has been carefully thought out. Repetitions are infrequent. The deeper printing of important words and sentences is most serviceable for quick reference. The illustrations and diagrams are striking, and aptly chosen, and the tables of differential diagnosis undoubtedly useful.

There is no lack of up-to-date information as shown on such diverse subjects as opsonins, kidney adequacy, ortho-percussion, cytodiagnosis, &c.

Of the special articles—that on blood examination, by Dr. Thomas Houston, and X-ray diagnosis, by Dr. J. C. Rankin, give admirable, short, but clear, accounts of the methods employed and deductions to be drawn from these examinations. At page 561 the radiogenic current is described as being induced "at each 'make' of the primary." We should prefer "break," as the "make" current is as far as possible suppressed. Fig. 74 of early tubercular infiltration of both apices is not very intelligible to those unfamiliar with the radiogram of a normal chest. Involvement of one apex would explain itself better.

The examination of the sputum by Dr. J. E. MacIlwaine would certainly be rendered clearer to the student by some diagrams of the bacteria. Mere verbal descriptions of micro-organisms convey little unless one is already conversant with them. The same remark applies to microscopic examination of urine for crystals, &c.

Malignant disease is not mentioned under the heading "cytodiagnosis," although in some such cases we have found the method of the utmost value. At page 110 there is an obvious printer's error—"*anterior* horns" being written "*interior*."

The book throughout bears the mark of being the embodiment of clinical teaching carefully elaborated to present diagnostic methods to the student in the clearest possible light. It is well written, and refreshingly original. Concise, but by no means uninteresting, it may often save practitioner or student a weary search through journals and text-books, and is not a book to rest idle on the shelf.

Diseases of the Lungs. By ROBERT H. BABCOCK, A.M., M.D.; late Professor of Clinical Medicine, College of Physicians, Chicago, U. S. With 12 Coloured Plates and 104 Text Illustrations. London: Sidney Appleton. 1907. Pp. xix + 809.

THIS is the companion volume to the author's "Diseases of the Heart," which was published some four years ago. It is a nicely got up book of about 800 pages, is clearly printed on good paper, and is provided with an index. The author's large experience enables him to speak with authority on most of the subjects dealt with, and to his personal knowledge he adds, at the beginning of each article, a brief historical *résumé* of the development of our knowledge of the various pulmonary diseases. Undue length is avoided by the omission of any discussion of untenable theories and obsolete methods of treatment, but, at the same time, the writer does not fail to mention and express his opinion on most current theories and therapeutic methods.

Most of the rarer diseases of the lung are fully dealt with, as, for example, pulmonary blastomycosis, echinococcus cysts of the lung, spontaneous pneumothorax, and interlobar empyema, but we find no mention of acute suppurative pulmonary œdema independent of that which occasionally follows upon aspiration of a pleural effusion; nor do we think that septic broncho-pneumonia by direct extension is adequately noticed. The author also omits any general discussion of pulmonary physics, and of physical signs, probably owing to the fact that several books entirely devoted to these subjects are now obtainable. We think, however, that even a short chapter dealing with methods of examination would be a useful addendum, and would enhance the value of the work.

The book is divided into three main parts, dealing respectively with diseases of the bronchi, of the lungs, and of the pleura. A special feature is the detailed account of the treatment advocated for each disease, and in this respect we regard the book as decidedly superior to most other works on the same subject. Still here again one is struck by occasional omissions, such as the absence of any reference to the Louvain treatment for tuberculosis, while throughout the English reader will find that some of the remedies recommended are unfamiliar and hail from the other side. The plates and illustrations are well executed, and include representations of both pathological specimens and clinical types. The figure on page 235 shows the interlobar fissure of the lung at rather too low a level, and that on page 309 seems rather superfluous.

With most of the author's opinions we are in agreement, and we notice with pleasure his caution regarding the value of vaunted specifics for acute pneumonia, and his advice to allow the fluid to flow away unaided when tapping a pleural effusion, instead of making use of some form of aspirator. The chapter on the clinical varieties of acute pneumonia is especially valuable, and contains, like most of the other chapters in the book, short accounts of cases which had come under the writer's own observation. Such brief concrete records are always useful, and frequently illustrate a subject better than the most elaborate abstract descriptions. More than 200 pages are devoted to pulmonary tuberculosis in its various forms, and an important chapter on prophylaxis is added. In a thoughtful chapter the author advocates the sanatorium and open air treatment, and is able to express his opinions on the value of drugs in a couple of pages.

On the whole we can say that we have perused the greater part of the work with pleasure, and that we can recommend it as a reliable work of reference to both specialists and practitioners.

Eye Injuries and their Treatment By A. MAITLAND RAMSAY, M.D. With 25 Plates. Glasgow: James Maclehose & Sons. 1907. 8vo. Pp. 210.

THIS handsomely got up volume, with gilt edges above and rough edges elsewhere, is based on the lectures given from time to time in connection with *post*-graduate courses. These have been re-written, and are now published all together in the hope that they may prove helpful to general practitioners. Their scope is purely clinical, consequently all discussion of theories has, as far as possible, been avoided. The author, considering that personal experience, even though it be limited, is always of value, has simply tried to give a plain statement of facts as he has observed them at the bedside.

As the book deals with treatment, he has added a chapter on ocular therapeutics, and another giving general directions for operations on the eye. He gives fifty pages of the formulæ in use at the Glasgow Ophthalmic Institution, as he thinks they may serve to guide practitioners in writing prescriptions. The descriptions are clearly and well written, and the illustrations, both coloured and uncoloured, are very satisfactory and instructive.

We are sure that Dr. Ramsay's work will be appreciated by anyone requiring a special volume on eye injuries and their treatment.

PART III.

SPECIAL REPORTS.

REPORT ON OPSONINS.

By T. Gillman Moorhead, M.D., F.R.C.P.I.; Physician to the Royal City of Dublin Hospital.

The July number of the "Johns Hopkins' Hospital Bulletin" for 1907 contains a series of five papers on the subjects of opsonins and vaccine therapy. The subjects are of so much importance, and have attracted such wide attention on the part of the profession, that the views from a new body of workers must be received with attention, and be subjected to careful study. We, therefore, think it advisable to summarise here the main points of the more important of these papers.

The first paper deals with "The Treatment of Gonorrhœal Arthritis by Vaccines." The writers selected this disease for their experimental study owing to its frequency and the fact that treatment, as at present carried out, is unsatisfactory. Another point of importance they considered is that the disease usually runs a chronic course. The strains of gonococci employed in the estimation of the index were two in number, and were obtained from a case of gonorrhœal arthritis and from a case of gonorrhœal peri-ostitis. It was found impracticable to isolate the special organism present in each individual case. An emulsion was made from cultures not more than twenty-four hours old made on blood agar. As regards vaccines, four made from different strains were employed, but it is stated that no distinct difference could be demonstrated in the clinical results or effects on the opsonic index when the patient was vaccinated with a vaccine made of his own organism, or when a different vaccine was used. The usual initial dose was 300 million gonococci, and this was gradually increased up to 1,200 million. A local reaction was observed in most cases, but only once was at all troublesome. No negative phase was observed as far as the index was concerned. The number of injections varied in the different cases from one to eight—fifteen cases in all being treated. Looking over the charts and protocols of these cases, one finds that the index was below normal in all of them prior to vaccination, and that after the injection the index invariably rose. In one or two cases vaccination seemed to do good after other means had failed, but the writers by no means feel assured that the good result can be attributed to vaccination alone. They feel convinced that there is no real danger of cumulative negative phases, and that, therefore, the vaccines may be given at intervals of seven to ten days, uncontrolled by an estimation of the index. The technique for determining the opsonic index, indeed, they regard as too inaccurate at present to be of any real value. No brilliant results and no immediate cures were obtained, but the general experience of the writers seems to be favourable to the method. They strongly, and rightly, object to the publication of isolated miraculous cures, and maintain that the treatment must be tested like any other, by persons uninfluenced by enthusiasm for theoretical considerations. With these opinions we are in thorough agreement.

The second paper deals with "The Tuberculo-Opsonic Index and Treatment by Tuberculin." In making a bacillary emulsion the writers have found that the most satisfactory method is to emulsify the living bacilli with salt solution in the same way as a staphylococcus emulsion is prepared. The organisms are then killed by exposure to direct sunlight for ten hours, and an emulsion is obtained free of fragmented bacilli and of clumps. The limits of error in determining the index were next considered. It is pointed out that the same worker will obtain very different counts according as he counts the bacteria in fifty leucocytes found at the beginning, the middle, and the end of the smear, and that this occurs even when the worker has had prolonged and regular experience in the general technique. It is possible, they think, to obtain a correct estimate by counting from 300 to 500 cells, but with the usual count of 50 cells they have found the index to vary from .4 to 2.34, by making a series of counts at different parts of the same two slides. They, therefore, boldly state that the present technique is too inaccurate to be of value. This deliberate opinion, based on careful work, is one with which we believe many honest workers will agree, and is in favour of doing away with the determination of the index as a guide to treatment. The writers also point out that the variations to be seen in opsonic charts can partly be accounted for by the laws of chance, and that the charts of cases that do well often do not differ materially from the charts of cases that do badly. Although the control by the opsonic index is untrustworthy, the writers think that the method of treatment by tuberculin R. in doses of from .001 to .0025 mgs. is of decided value in cases of localised tuberculosis. Injections were given to nine reported cases every eight or ten days, and in the majority of these improvement was noted, though no miraculous cures were obtained. The importance of general hygiene in addition to the tuberculin treatment is insisted on. As a diagnostic aid, Wright's method of heating the serum for the detection of immune opsonins has not proved of value.

The third paper, entitled "Studies on Opsonins," was primarily undertaken to determine to what extent the opsonic content of the blood could be increased, as it seems *à priori* strange that such immune substances as agglutinin and bactericidal anti bodies can be so enormously increased, while opsonins can only be comparatively slightly increased by the injection of opsinogens. The organism employed in the study was *Staphylococcus aureus*, and the animals worked upon were rabbits. In addition to taking the opsonic index the writer also determined the phagocytic index—*i.e.*, the index obtained by dividing the percentage of cells phagocyting in any given slide with the number phagocyting in a control slide. The index was taken, moreover, with not only the undiluted serum but also with a series of dilutions up to one in a hundred. As far as dilution was concerned, it was found that in a general way the largest percentage of cells phagocyting occurred in the undiluted serum, and progressively diminished as the dilution was carried on. This was, however, by no means constant. Only in a general way do the phagocytic and opsonic indices run parallel. In fact, in using bacterial emulsions of different strengths the same percentage of cells may phagocyte, while the number of bacteria taken up may be widely different. The index in normal rabbits prior to inoculation was found to vary widely, and the ratio of one serum index to that of another was not found to vary proportionately when dilutions were made. As regards the main object of the inquiry, it was found impossible to raise the index as determined by Wright's methods to more than about five times the normal. The writer lays great stress on the variation of the index in normal serums, and also upon the great liability to error in making the estimation. He holds that a count of less than 600 cells is of little value, and maintains, like the writer of the last summarised paper, that the count depended on the part of the slide from which the cells were chosen. This could easily occur, for the larger polynuclear cells loaded with bacteria may reasonably be regarded as of a different consistence and bulk to those that contain few bacteria. In making the smear, therefore, they would be likely to be spread out at a different place to that of the lighter cells.

The fifth paper deals with "The Specificity of Opsonins in Normal and Immune Sera." Bulloch and Western, working with *B. pyocyaneus*, the tubercle bacillus, and with staphylococci concluded that opsonins were specific. Simon and others, working with *B. coli*, *B. typhosus*, and *staphylococci* come to the opposed conclusion. The present writer, in numerous experiments, found that serum saturated with staphylococci was also deprived of its opsonin for *B. coli*. On working with *B. pyocyaneus*, however, it was found that this organism was exceptional in many ways in that saturation of serum with staphylococci did not remove the opsonin for *B. pyo-*

cyaneus, and in that heating the serum does not remove the opsonin for that organism. It was also found that *B. pyocyaneus* undergoes spontaneous phagocytosis in the absence of serum more readily than other organisms. Some further experiments confirmed this writer in his view that the opsonins of normal serums are not specific, but suggested that the increase of opsonin following the injection of a bacterial vaccine is a true specific increase.

The opinions expressed above concerning the specificity of opsonins were confirmed by the writer of the fourth paper, who, working with typhoid bacilli, found that the opsonin of normal rabbit serum was largely non-specific, but that the opsonin developed during the process of immunisation of rabbits was definitely specific for the typhoid bacillus. This writer determined the amount of opsonin present by determining what dilution of the immune serum would produce phagocytosis as compared with normal serum. By this method he has demonstrated that the opsonin may increase enormously during the process of immunisation, although Wright's method of estimating the index may only show a fractional increase. The mathematics of this paper cannot, however, be regarded as very sound.

Regarding the series of papers as a whole we find some very definite expressions of opinion on the opsonin question. The more important of these appear to be as follows:—(1) Treatment of disease by vaccines, as suggested by Wright, seems in many cases to produce moderately favourable results; (2) Wright's method of determining the amount of opsonin present, although better than the method of taking the "phagocytic index," is too inaccurate to be of any real value; (3) the amount of opsonin present in the serum of normal animals seems to vary enormously from day to day; (4) in treatment of disease by vaccines it is unnecessary, and, indeed, useless, to follow the opsonic index curve as determined by Wright's methods; (5) the opsonins of normal serum are non-specific.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. **Magee Finny**, M.D., F.R.C.P.I.
General Secretary—**James Craig**, M.D., F.R.C.P.I.

SECTION OF PATHOLOGY.

President—J. F. **O'Carroll**, M.D., F.R.C.P.I.
Sectional Secretary—**Professor** A. H. **White**, F.R.C.S.I

Friday, May 3, 1907.

Dr. Arthur H. Benson in the Chair.

Vaccine Inoculations and the Opsonic Index.

Professor White, Secretary of the Section, read a paper on the above, and illustrated it by means of a number of lantern slides. [It will be found at page 161].

Dr. Moorhead said that Professor White, in summing up his investigations as substantiating Professor Wright's statements, had done them very great service. As regards the safety of giving doses of the vaccine without following the opsonic index, he had visited Professor Wright's laboratory in the summer, and had found that they were not taking the index frequently. Since then he had continued giving tuberculin injections to lupus cases, but had not taken the index as often as formerly; so far, however, he had seen no bad results. As soon as he saw a case apparently not improving, or getting worse, he at once took the index and stopped injections. He thought it was an error, in connection with the reaction of the serum to be found in local regions, to say that the serum had gone up; he would rather think that the index had gone down from the index of the blood—in other words, the opsonic index was low because the infection had taken place, the opsonin had most likely been used up.

Although Professor Wright had given the new hope, he had struck rather a pessimistic note in stating that the reason why people get diseases at all is that they have a low index. A good many cases of cure reverted to the low index; hence, they had to assume that unless they could continue the inoculations throughout life there would be a great tendency to relapse.

THE CHAIRMAN said it would be a great advantage if a method could be found of obtaining the opsonic index, which would be applicable to institutions where there was no pathologist with enough time to carry on the laborious examinations at present necessary to obtain the index. He had used tuberculin injections for many years, latterly with rather good results. In most cases he had to go by a rule of thumb method, which was not satisfactory.

PROFESSOR WHITE, in replying, said that for routine inoculations lupus was the type of case to select. The falling off in the taking of the index at Professor Wright's laboratory was probably due to the absence of workers on holidays and to the absence of the chief. Anyhow, when one had been making blood examinations in a case for several months one got to know the case extraordinarily well, and could work the inoculations with fewer examinations than at first. He thought the dose that suited the average patient ranged about $\frac{1}{1500}$th or $\frac{1}{1200}$th mg.—that is to say, the dose that would give the minimal negative and maximal positive phase; but there were odd cases where $\frac{1}{2000}$th would be too much. The patients which were improving were those in which he got the index above normal with little variation. The exigencies of other work, however, had not allowed him to treat all the cases exactly as they should be treated.

The Pathological Report of the Rotunda Hospital for the Year ending October 31, 1906.

DR. ROWLETTE gave details of 7 *post-mortem* examinations in the case of adult patients; of 84 examinations of curettings and other fragments for the purposes of diagnosis; of 91 examinations of tumours and other operation specimens; of 25 examinations of uterine lochia in morbid cases; and of the objects added to the Museum during the year. The pathology and classification of endometritis was discussed, three-fifths of the specimens met with being regarded as "glandular endometritis"; "cystic endometritis" was to be regarded as a variety of "glandular" and not as a distinct class. Among the more interesting tumours described were adeno-carcinoma of vulva, adeno-carcinoma of uterus with implantation in vagina, fibroid of uterus becoming sarcomatous, endothelioma of uterus and endothelioma of ovary. Two cases of carcinoma of the ovary were met with. One fatal case of streptococcic puerperal infection had occurred. [The Report is published in full at page 190.]

Dr. Hastings Tweedy expressed his obligation to Dr. Rowlette for the valuable work he had done throughout the year at the Rotunda Hospital. In expressing his gratitude to Dr. Rowlette he expressed the gratitude that all practitioners owed to pathologists and bacteriologists, without whose aid the efficiency of their hospitals would be enormously lessened.

Dr. Moorhead also spoke, and **Dr. Rowlette** replied.

Epidemic Cerebro-Spinal Meningitis.

Professor E. J. McWeeney, M.D., read a paper on the bacteriology of the disease, in the course of which, after summing up the results of recent investigations elsewhere, he detailed his own experiences of the present outbreak in Ireland. He demonstrated cultures of the typical Gram-negative Weichselbaum coccus which he had isolated from cases in Dublin and Clones, also of the Gram-positive coccus which he considered to be identical with Jaeger's organism, and of another Gram-negative diplococcus, forming bright yellow colonies which had made its appearance in cultures of the Dublin organism, which he had looked upon as pure. The Jaeger microbe was distinctly clumped (up to 1 in 100) by the serum of a child in Cork Street Fever Hospital, looked upon as a case of the epidemic form. The speaker referred to the delicacy of the genuine organism and its tendency to die out even when subcultural every second or third day on serum-media. This character made it very unlikely that the organism could remain alive outside the body for more than a few hours. Propagation must, he thought, take place altogether or chiefly through " contacts " harbouring the virulent coccus in their naso-pharyngeal mucus. He was of opinion that in towns like Belfast and Glasgow, where the disease claimed many victims, it would be worth while to attempt systematic bacteriological examination of healthy contacts and to isolate the coccus-carriers. In this connection he emphasised the importance of identifying the true organism, as there were several other Gram-negative cocci closely resembling it. The value of sugar-media containing litmus as an indicator of the fermentative action of the organism in question had been drawn attention to by v. Lingelstein in Germany, and more recently by Mervyn Gordon in England. The speaker demonstrated several comparative series of genuine meningo-cocci and closely related organisms on litmus-serum-agar containing dextrose, galactose, lactose, maltose, raffinose and other sugars, and exhibited water-colour drawings which he had had made as permanent records of the interesting appearances. The speaker concluded by referring to the pathogenesis of the disease being due to a powerful endotoxin which might, he thought, be obtained by comminution of the organism at the temperature of liquid air as practised by M'Fadyean and Rowland in the case of typhoid. Once obtained he saw no reason why an antitoxin might not be procured which might be utilised therapeutically. The communication was illustrated by coloured lantern slides.

PROFESSOR WHITE said his experience in regard to fulminating cases was directly opposite to Professor McWeeney's, who had stated that very few organisms were found in such cases. In fluids obtained from two children who died in the Meath Hospital after less than three days' illness the organisms were extremely numerous, and the number of colonies obtained were very great; the same applied to a Cork Street Hospital case which was stated to be absolutely well on the 19th and died on the 21st. He believed that we had not the smallest notion of why the disease was epidemic, and that we should start in the investigation of it from the standpoint of absolute ignorance. He was personally inclined to think that auto-infection played a greater part in the infection of the individual than the actual transference of the organisms from persons to persons. They were rarely found in the front part of the nose, but were easily got in the naso-pharynx. One investigator found them in seventeen out of twenty-four relatives of sick people. In one case he had examined six contacts, and, although the examination was not as thorough as it might have been, he found the meningo-coccus in two of them. Other organisms were obtained along with the typical meningococcus, which he was inclined to look upon as of considerable importance. The entrance of the organism to the brain was probably gained by passing along the lymphatic sheaths of the great vessels.

DR. ROWLETTE wished to know if any attempt had been made to separate outside the body the toxin which was set free by the breaking up of the organism. Attempts to inoculate animals with living organisms had failed, but it did not follow that they could not be affected by the toxins.

PROFESSOR McWEENEY, in reply, said he did not regard the point about the fulminating cases as very important. He had had only one experience, yet he had found it to be the same as others. As regards auto-infection, the experience of those who had swabbed cases was that amongst persons who had no relation whatever to the disease it was of the utmost rarity to get an organism which could be proved to be the meningococcus. The hypothesis that the organisms gained entrance by the lymphatic sheaths was a highly tempting one, if any evidence could be found in its favour, but there was none. Experiments had been made with the object of seeing whether the meningococcus secreted a toxin in its culture fluid, and it has been unanimously decided that it did not secrete any toxin of any great power. It was not at all easy to get endo-toxins out of protoplasm by ordinary methods of breaking it up; it had been done in the case of the typhoid toxin, but it was a difficult and costly investigation. In order to get at the ferment in the yeast cells it has been found necessary to grind them with sand, and he had no doubt that, if a sufficient quantity of the organism could be got together in a healthy state, and treated in that way, an endo-toxin would be obtained.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following gentlemen, having passed the requisite examinations, were, at a meeting of the College held on July 16th, 1907, admitted Fellows :—Edward Archer-Brown, M.B., M.R.C.S. Eng., L.R.C.P. Lond., Johannesburg; William Bruce Bell, M.B., C.M., Manchester; Alexander Glover Coullie, M.B., Ch.B., Pencaitland; David Elliot Dickson, M.B., C.M., Lochgelly; William Arnott Dickson, M.B., Ch.B., Lochgelly; Henry Tristram Holland, M.B., Ch.B., Beluchistan; William Leonard MacCormac, M.B., Ch.B., London, S.W.; Archibald M'Kendrick, L.D.S., L.R.C.S.E., Kircaldy; Charles Edmund Russel Rendle, M.R.C.S. Eng., L.R.C.P. Lond., Plymouth; Herbert Wilkinson, Riggs, M.D., C.M., Vancouver; Geoffrey Allen Upcott-Gill, M.R.C.S. Eng., L.R.C.P.. Lond., London, N.W.; and William Young, M.B., C.M., Major, Indian Medical Service.

MEDICAL EDUCATION AND EXAMINATIONS IN IRELAND.

1907–1908.

MEDICAL students in Ireland, as elsewhere, have in the first instance to choose between University Degrees and Non-University Qualifications or Diplomas. Should they elect to try for a University Degree, their choice must lie between the University of Dublin, which requires a Degree in Arts before registrable Degrees in Medicine, Surgery, and Midwifery are conferred, and the Royal University of Ireland, which—while not requiring a full Arts Degree—yet rightly insists on a liberal education in Arts, tested by more than one searching examination in the same, before a candidate graduates in the three branches of medicine already mentioned—Medicine, Surgery, and Midwifery. Under the Regulations of the School of Physic in Ireland (*vide infra*, page 297), considerable Professional Privileges are afforded to medical students in regard to the Arts Curriculum of the University of Dublin.

Outside the Universities, the chief Licensing Bodies are the Royal Colleges of Physicians and Surgeons. The position of the Apothecaries' Hall of Dublin as a Licensing Corporation under the Medical Act of 1886 has been defined by the appointment of Examiners in Surgery by the General Medical Council at the bidding of His Majesty's Privy Council.

The Royal Colleges of Physicians and Surgeons are in a position to give a first-class working qualification in Medicine, Surgery, and Midwifery—a qualification which is registrable under the Medical Acts, which is universally recognised as one of high merit, and the possession of which is attended by no disabilities, such as preventing its possessor from dispensing medicines or keeping open shop for the sale of medicines, if he is legally qualified to do so.

The Medical Schools in Ireland are—(1.) The School of Physic in Ireland, Trinity College, Dublin; (2.) The Schools of Surgery of the Royal College of Surgeons in Ireland (including the Carmichael College of Medicine and the Ledwich School of Medicine); (3.) The Catholic University Medical School, Cecilia-street, Dublin; (4.) The School of Medicine, Queen's College, Belfast; (5.) The School of Medicine, Queen's College, Cork; and (6.) The School of Medicine, Queen's College, Galway.

Facilities for Clinical Instruction in fully-equipped Medico-Chirurgical Hospitals exist in Dublin, Belfast, Cork, and Galway; but, as a rule, the Schools of Medicine in Ireland are not attached to a given hospital, or *vice versâ*, as is the case in London and other large centres of medical education. The student will, however, have little difficulty in selecting a hospital, in the wards of which he will receive excellent bedside teaching and have ample opportunity of making himself familiar with the aspect and treatment of disease.

The detailed information which follows is authentic, being taken directly from the published calendars of the respective licensing bodies.

REGULATIONS PRESCRIBED BY THE GENERAL MEDICAL COUNCIL.

With regard to the course of Study and Examinations which persons desirous of qualifying for the Medical Profession shall go through in order that they may become possessed of the requisite knowledge and skill for the efficient practice of the Profession, the General Medical Council have resolved that the following conditions ought to be enforced without exception on *all* who commence their Medical Studies at any time after Jan. 1, 1892:—

(*a.*) The period of Professional Studies, between the date of registration as a medical student and the date of Final Examination for any Diploma which entitles its bearer to be registered under the *Medical Acts*, must be a period of *bonâ fide* study during not less than five years. For the purpose of this requirement the close of the fifth year may be reckoned as occurring at the expiration of fifty-seven months from the date of registration.

(*b.*) In every course of Professional study and Examinations, the following subjects must be contained:—

(I.) Physics, including the Elementary Mechanics of Solids and Fluids, and the Rudiments of Heat, Light, and Electricity.
(II.) Chemistry, including the principles of the Science, and the details which bear on the study of Medicine.
(III.) Elementary Biology.
(IV.) Anatomy.
(V.) Physiology.
(VI.) Materia Medica and Pharmacy.
(VII.) Pathology.
(VIII.) Therapeutics.
(IX.) Medicine, including Medical Anatomy and Clinical Medicine.
(X.) Surgery, including Surgical Anatomy and Clinical Surgery.
(XI.) Midwifery, including Diseases peculiar to Women and to New-born Children. [By a recent decision of the General Medical Council the study of (XI.) must not commence till the student has held the posts of Clinical Clerk and Surgical Dresser.]
(XII.) Theory and Practice of Vaccination.
(XIII.) Forensic Medicine.
(XIV.) Hygiene.
(XV.) Mental Disease.

The first four of the five years of Medical Study must be passed at a School or Schools of Medicine recognised by any of the Licensing Bodies, provided that the First Year may be passed at a University, or Teaching Institution, recognised by any of the Licensing Bodies and approved by the Council, where the subjects of Physics, Chemistry, and Biology are taught.

A student who has, previous to registration, attended a course or courses of study in one or all of the subjects, Physics, Chemistry, or Biology, in any University, School of Medicine, or Teaching Institution recognised by any of the Licensing Bodies, may without further attendance be admitted to examination in these subjects: provided always that such course or courses shall not be held to constitute any part of the five years' course of professional study.

A graduate in Arts or Science of any University recognised by the General Medical Council, who has spent a year in the study of Physics, Chemistry and Biology, and has passed an examination in these subjects for the degrees in question, is held to have completed the first of the five years of medical study, provided that he has registered as a medical student with the General Medical Council.

The Examinations in the Elements of Physics, Chemistry, and

Biology should be passed before the beginning of the Second Winter Session.

The General Medical Council recommends the Licensing Bodies to require that the fifth year should be devoted to clinical work at one or more public hospitals or dispensaries, British or Foreign, recognised by any of the medical authorities mentioned in Schedule (A) of the Medical Act (1858), provided that no Qualification in Medicine ought to be granted without evidence of Clinical Instruction in Infectious Diseases.

I.

UNIVERSITY OF DUBLIN.

DEGREES AND DIPLOMAS IN MEDICINE, SURGERY, AND MIDWIFERY; AND IN DENTISTRY.

The Medical School of the University of Dublin has for its official title the name of The School of Physic in Ireland. It is officered by University Professors and Examiners and by four King's Professors appointed by the President and Fellows of the Royal College of Physicians of Ireland, acting as Trustees of the Estate of Sir Patrick Dun.

MATRICULATION.

Students cannot be permitted to attend any of the Courses of Instruction in the School of Physic in Ireland until they have Matriculated. There is no special Examination; the Public Entrance and Term Examinations of Trinity College, or any other of the Preliminary Examinations recognised by the General Medical Council, being accepted as equivalent. The Matriculation Fee is Five Shillings. It is not necessary for Students to have their names on the College Books, or to attend any of the Academical duties of the University, unconnected with the School of Physic, unless they desire to obtain a Diploma or Degree in Medicine, Surgery, and Midwifery. Students may matriculate at the commencement of either the Winter or the Summer Session. The 17th of November is the last day of admission to the Winter Session. In the Summer Session the day varies a good deal according to the time at which Easter occurs, and the Courses of Lectures for which the Student proposes to enter.

WOMEN STUDENTS.

Women Students are now admitted to the Degrees and Diplomas in Medicine, Surgery, and Midwifery, on the same conditions as men. A special Anatomical Department, with separate entrance, dissecting-room, and reading-room, has been erected by the Board of Trinity College for their accommodation.

The Qualifications in Medicine, Surgery, and Midwifery, and in Dental Science, granted by the University are as follow:—

The Degrees are:—

1. Bachelor in Medicine.
2. Bachelor in Surgery.
3. Bachelor in Obstetric Science.
4. Doctor in Medicine.
5. Master in Surgery.
6. Master in Obstetric Science.
7. Master in Dental Science.[a]

The Diplomas are:—

1. Diploma in Public Health (formerly Qualification in State Medicine).
2. Diploma in Medicine.
3. Diploma in Surgery.
4. Diploma in Obstetric Science.
5. Licence in Dental Science.[a]

REGULATIONS FOR OBTAINING THE DEGREES OF M.B., B.CH., AND B.A.O.

I. *Arts Course.*—Before they can join the Medical School Students must pass (*a*) a Junior Freshman Term Examination, or (*b*) a Special Preliminary Examination to be held in March, the standard and subjects of which shall be those of a Junior Freshman Examination, with the exception of Trigonometry, or (*c*) the Junior Freshman Michaelmas Examination exclusive of Trigonometry. They complete their Arts Course for the Freshman years, and obtain credit for the Final Freshman Examination by attending Arts Lectures in Mechanics—including the necessary amount of Trigonometry—English Composition and Logics in the Trinity Terms of the Junior and Senior Freshman years, passing the Preliminary Scientific Examination in full, and an Examination in Mechanics, Logics, English Composition, and *one* language—viz., French, German, Latin, or Greek. The Examination in Mechanics may be taken at the Ordinary Final

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[a] See page 322.

Freshman or at a special Examination to be held at the date of the Preliminary Scientific in Physics and Chemistry.

They obtain credit for their Arts Course for the Sophister years, and for the B.A. degree thus:—

(*a*) They attend Courses of Lectures in Astronomy and in Ethics in the Trinity Terms of the Junior and Senior Sophister years, respectively, and write a composition on some subject connected with the Course on one lecture-day in each week.

(*b*) At the conclusion of the Astronomy Lectures they pass an Examination held by the Lecturers.

(*c*) They produce evidence of satisfactory progress in the Medical Studies of their third and fourth years (see p. 303: Class Examinations).

(*d*) They pass at the B.A. Examination in the Ethics Course (*a*, above) and in English Composition, and Part II. of the Intermediate Medical Examination.

II. *Medical Course.*—They produce evidence of having passed the Special Preliminary Examination, or its equivalent (see above), pay a Matriculation fee of 5s., and proceed with the following Courses and Examinations:—

FIRST YEAR—

First Winter[a]—

Chemistry Lectures	£2	2	0
Physics and Mechanics Lectures ..		—	
Practical Physics		—	
Systematic Anatomy Lectures ..	3	3	0
Descriptive Anatomy Lectures ..	3	3	0
Dissections	5	5	0
	£13	13	0

First Summer—

Botany, Lectures and Practical ..	£1	11	6
Zoology, Lectures and Practical ..	1	11	6
Practical Chemistry	3	3	0
	£6	6	0

PRELIMINARY SCIENTIFIC.

The subjects are—(*a*) Chemistry and Physics, and (*b*) Zoology and Botany. All the subjects may be passed at the same time, or they may be passed in two groups, (*a*) and (*b*).

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[a] In the Table of Fees here given certain Reductions allowed to Matriculated Students have already been made.

Before presenting themselves for this Examination, Students must have attended the recognised Courses of Instruction in the subjects of the Examination.

Second Year—

Second Winter—

Anatomy Lectures	£3	3	0
Physiology Lectures	3	3	0
Dissections	5	5	0
Hospital Elementary Instruction[a] ..	12	12	0
	£24	3	0

Second Summer—

Histology	£5	5	0

Intermediate Medical, Part I.

The subjects are—Anatomy, Histology, and Physiology (omitting the Physiology of the Sense-Organs, and of the Central Nervous System). Both subjects must be passed at the same time.

Before presenting themselves for the Examination, Students must have attended the Courses of Instruction prescribed for the First and Second years of Medical study, and *must have completed the Preliminary Scientific Examination.*

The Examination will consist of a paper, a practical, and an oral in each subject.

Third Year—

Third Winter[b]—

Applied Anatomy Lectures ..	£3	3	0
Physiology Lectures	3	3	0
Practical Physiology	2	2	0
Surgery	2	2	0
Hospital Practice	12	12	0
	£23	2	0

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[a] Hospital attendance cannot be commenced until the student has obtained credit for six months' dissections.

[b] Students who have credit for two years' dissections in Trinity College will be allowed to dissect in their third or subsequent year on payment of £3 3s. for the Winter Session.

Students who have credit for two years' dissections in Trinity College, and wish to dissect during the fourth or fifth year, can do so on payment of £2 2s. for the Winter Session.

INTERMEDIATE MEDICAL, PART II.

The subjects are—Applied Anatomy and Applied Physiology (including the Physiology of the Nervous System and of the Sense-Organs). Both subjects must be passed at the same time.

Before presenting themselves for the Examination, Students must have attended the prescribed Courses of study, and *have completed Part I. of the Examination.*

The Examination will consist of a paper and an oral in each subject, together with a Practical Examination in Applied Physiology.

Third Summer—

Materia Medica and Therapeutics ..	£3	3	0
Operative Surgery[a]	2	12	6
	£5	15	6

N.B.—The Courses of the Fourth Year cannot be commenced until Part II. of the Intermediate Examination has been completed.

FOURTH YEAR—

Fourth Winter—

Practice of Medicine	£3	3	0
Midwifery	3	3	0
Pathology[b]	2	2	0
Hospital Practice	12	12	0
	£21	0	0

Fourth Summer—

Medical Jurisprudence and Hygiene..	£3	3	0
Practical Pathology	2	2	0
	£5	5	0

FINAL MEDICAL, PART I.

The subjects are—Pathology, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene. All the subjects must be passed at the same time.

Before they are admitted to the Examination, Students must have attended the prescribed Courses of study, and paid the *Liceat* Fee (£5).

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[a] Operative Surgery may be taken by those Students only who have completed Part I. of the Intermediate Examination.

[b] Freshman Students pay £3 3s.

Vaccination (Fee, £1 1s.) should be taken out in the fourth year.

FIFTH YEAR—

Practical Midwifery	£10	10	0
Mental Disease	3	3	0
Ophthalmic Surgery	3	3	0
	£16	16	0

FINAL MEDICAL, PART II.

The subjects are—(*a*) Medicine, Clinical Medicine, and Mental Disease; (*b*) Surgery, Clinical Surgery, Surgical Operations, and Ophthalmic Surgery; (*c*) Midwifery and Gynæcology.

Students may present themselves for Examination in any of these groups (*a*), (*b*) or (*c*), separately or together, at either of the Examinations during their Fifth Year; but they must leave at least one of these groups until the end of their Fifth Year. Before presenting themselves for any of these Groups, Students must have attended all the prescribed Courses of Instruction in the subject in which they present themselves for Examination, and paid the *Liceat* Fee (£5).

TOTAL EXPENSES OF FOREGOING COURSES.

I. Lectures	£67	4	0
II. Hospitals	55	13	0
III. Degrees (M.B., B.Ch., B.A.O.) ..	27	0	0
TOTAL ..	£149	17	0

UNIVERSITY DIPLOMAS.

Candidates for the Diplomas in Medicine, Surgery, and Obstetric Science must be matriculated in Medicine, and must have completed two years in Arts, and five years in Medical Studies.

The dates, regulations, and subjects of Examination are the same as for the Degrees, except that it is not necessary to attend the Courses of Lectures in Botany and Zoology, or to pass the Previous Medical Examination in these subjects.

Diplomates on completing the Course in Arts, and proceeding to the Degree of B.A., may be admitted to the Degree of Bachelor on paying the Degree Fees.

The *Liceat* fees are the same as for the Finals.

Candidates who have completed the prescribed Courses of study and passed all the Examinations will be entitled, if Graduates in Arts, to have conferred on them the Degrees of M.B., B.Ch., B.A.O., on payment to the Senior Proctor of the Degree Fees amounting to £17. A corresponding regulation applies to the Diplomas, the Fees for which are £11. They will also obtain from the Senior Proctor a Diploma entitling them to be entered on the Register of Medical Practitioners under the Medical Act, 1886.

RE-EXAMINATION.

Every Student, who having entered for any of the Medical Examinations, fails, for any reason, to obtain credit for it, shall pay a fee of 10s. 6d. for any occasion on which he presents himself again for the same Examination.

CLASS EXAMINATIONS.

Students will be required to show a reasonable knowledge, as ascertained by Examination during the Session, of the subject of a Course of Lectures before a certificate of satisfactory attendance is issued by the Professor in charge, and the return to the Senior Lecturer is to include a statement that this condition has been fulfilled.

DATES OF EXAMINATIONS FOR 1907–1908.

Preliminary Scientific begins—October 14; March 23; June 24.

Intermediate Medical, Part I., begins—October 14; March 16; June 22.

Intermediate Medical, Part II., begins—October 21; March 23; June 29.

Final Medical, Part I., begins—October 21; March 2; June 29.

Final Medical, Part II., begins—November 4 (Supp.); February 24; June 15.

Notice of intention to enter must be given to the Registrar of the School *not less than eight clear days before* each Examination begins. Printed forms of notice are provided. Certificates, when required, and *Liceat* fees, when due, are to be presented or paid when Students enter their names for the Examination.

ATTENDANCE ON LECTURES.

Students are expected to attend all the Lectures or Demonstrations delivered in each Course for which they enter, whether in the Winter or the Summer Session; but in order to provide for unavoidable absence, such as illness or attendance at Examinations, they are allowed credit for a Course if they have been present at three-fourths of the Lectures or Demonstrations actually delivered. If this proportion involve a fraction, the next highest whole number is reckoned as the minimum. If more than one-fourth have been missed, application must be made through the Committee of the School of Physic to the Board of Trinity College, by whom each case is decided on its merits, but the applicant must produce satisfactory reasons for omission of *all* the Lectures missed, not of the excess above one-fourth only. No Student will be allowed credit for a Course who has not been found diligent in attendance, when not prevented by illness or other cause considered sufficient by the Board.

HOSPITAL ATTENDANCE.

Three Courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other Metropolitan Hospital recognised by the Board of Trinity College are required.

During the first three months of the Winter Session in which Students begin their Hospital work, they must attend an Elementary Course of Hospital Instruction for one hour per day.

This certificate must be signed by all the Teachers who have taken part in the Instruction, and the attendances of each day must be entered in a list, supplied by the Board of Trinity College, and initialed by the teachers for that day.

Students will be required to attend at least three-fourths of the possible number in this three months' course in order to obtain credit for it.

During other years also a record of attendance at Hospital is required by the Board of Trinity College.

Students who shall have diligently attended the practice of a recognised London or Edinburgh Hospital for one year, of a recognised County Infirmary, or of a recognised Colonial Hospital for two years previous to the commencement of their Metropolitan Medical Studies, may be allowed, on special application to the Board of Trinity College, to count the period so spent as equivalent to one year spent in a recognised Metropolitan Hospital.

PRACTICAL VACCINATION.[a]

One month's instruction in Practical Vaccination to be attended at the Vaccine Department, Local Government Board for Ireland, 45 Upper Sackville Street; at No. 1 East Dispensary, 11 Emerald Street; or, until further notice, at the Grand Canal Street Dispensary.

MENTAL DISEASE.

A Certificate of attendance on a three months' Course of Practical Study of Mental Disease in a recognised Institution.

PRACTICAL MIDWIFERY.

A Certificate of attendance on a six months' Course of Practical Midwifery with Clinical Lectures, including not less than thirty cases.

OPHTHALMIC SURGERY.

A Certificate of attendance on a three months' Course of Ophthalmic Surgery.

DIPLOMA IN PUBLIC HEALTH OR STATE MEDICINE.

The Diploma in Public Health is conferred, after examination, by the University of Dublin, upon Candidates fulfilling the following conditions:—

1. The Candidate must be a Doctor in Medicine, or Graduate in Medicine and Surgery, of Dublin, Oxford, or Cambridge, or a Doctor in Medicine of London University.

2. The name of the Candidate must have been on the Medical Register at least twelve months before admission to any part of the Examination.

3. The Candidate must have completed, subsequent to Registration, six months in a Laboratory, recognised by the Provost and Senior Fellows, in practical instruction in Chemistry and Bacteriology applied to Public Health, and also have attended, practically,

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[a] The Local Government Board for Ireland require that, on and after May 1st, 1906, Medical Officers of Dispensary Districts must have attended a six weeks' course of instruction in vaccination with six attendances, four being in consecutive weeks, must have passed an examination, and must show practical knowledge in performing Vaccination. The L. G. B. recognises only the certificates issued by the Vaccinators authorised by the Board to give certificates of Proficiency in Vaccination. The Irish Educational Vaccination Stations are:—Dublin, 45 Upper Sackville Street—Vaccinator, Dr. Alexander N. Montgomery; Belfast, City Union Infirmary—Vaccinator, Mr. John M'Liesh, 49 Great Victoria Street; Cork, District Hospital—Vaccinator, Dr. W. E. A. Cummins, 17 St. Patrick's Place; Galway, The Dispensary—Vaccinator, Mr. M. J. M'Donogh, Flood Street.

outdoor Sanitary work for six months, under an approved Officer of Health,[a] of which at least three months shall be distinct and separate from the period of Laboratory Instruction.

NOTE 1. In the case of an Officer of the Royal Army Medical Corps, a certificate of outdoor sanitary work from a Staff Sanitary Officer may be accepted instead of one from a Medical Officer of Health.

4. The Candidate must, after obtaining a registrable Qualification, have attended during three months the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of Methods of Administration.[a]

NOTE 1.—Methods of Administration shall include the methods of dealing with patients at their admission and discharge, as well as in the wards, and the Medical Superintendence of the Hospital generally.

NOTE 2.—In the case of an Officer of the Royal Army Medical Corps, a Certificate from a Principal Medical Officer under whom he has served, stating that he has, during a period of at least three months, been diligently engaged in acquiring a practical knowledge of Hospital Administration in relation to Infectious Diseases, may be accepted as evidence under *Rule* 4.

The Examination to be passed by the Candidate is prescribed as follows:—

PART I.

Chemistry—Paper and Practical.

Experimental Physics and Meteorology—Practical.

Bacteriology and Pathology—Paper and Practical.

Candidates are liable to be examined in the method of conducting *post-mortem* Examinations.

PART II.

Hygiene and Epidemiology—Paper.

Sanitary Engineering—Paper.

Public Health Acts and Vital Statistics—Paper.

Practical Sanitary Report.

The two Parts may be passed consecutively or with an interval between, at the option of the Candidate, provided that the requisite curriculum for each Part has been completed before the Candidate presents himself.

Examinations for Part I. will begin on December 9, 1907,

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[a] These conditions do not apply to Practitioners registered, or entitled to be registered, on or before January 1, 1890.

March 9, 1908, and June 12, 1903; for Part II. on December 12, 1907, March 1, 1908, and June 4, 1908.

Candidates are required to send in their names to the Registrar of the School of Physic at least a week before the first day of Examination.

Candidates who have registered since January 1, 1890, are required to apply to the Board of Trinity College for leave to present themselves, a month before the Examination begins, and to submit at the same time Certificates of the required Courses of Study.

A fee of £10 10s. (to be paid to the Senior Proctor) is required.

COURSE IN CHEMISTRY FOR D. P. H.

The complete analysis of water. Estimation of carbon dioxide, and detection of ammonia and other constituents or impurities, in air. Complete analysis of milk and butter. Detection of adulterants in milk, flour, tea, coffee, mustard, and pepper. Detection of preservatives in foods. Detection of picric acid in beer and of alum in bread and flour. Microscopic examination of starches. Determination of acidity in vinegar. Identification and examination of disinfectants. Detection of various poisons in contents of stomach. General chemistry of ether, chloroform, nitric acid, chloral. Assay of caffeine.

Fee for the Course, £5 5s.

Candidates can join at any time during the Medical year by arrangement with the Professor of Chemistry.

A collection of Sanitary Appliances has been placed in the Engineering Museum, with which Candidates should make themselves familiar.

The attention of Students is directed to the importance of obtaining a Diploma in Public Health as soon as possible after they obtain their Medical Degrees. An increasing number of Public Bodies are requiring it as well as the usual Qualifications in Medicine, Surgery, and Midwifery.

II.

ROYAL UNIVERSITY OF IRELAND.

COURSES FOR DEGREES IN MEDICINE, SURGERY, AND OBSTETRICS.

General Regulations.

The Course for these Degrees shall be of at least five Medical years' duration. But Graduates in Arts or Science who shall have spent a year in the study of Physics, Chemistry, and Biology, and have passed an Examination in these subjects for the Degrees in question, shall be held to have completed the first of the five years of Medical Study.

Students who commenced their Medical Studies after Jan. 1, 1892, must furnish evidence of having been registered by the General Medical Council, as Students in Medicine, for at least 57 months, before being admitted to the M.B., B.Ch., and B.A.O. Degrees Examination.

No one can be admitted to a Degree in Medicine who is not twenty-one years of age.

All Candidates for these Degrees, in addition to attending the lectures and complying with the other conditions to be from time to time prescribed, must pass the following Examinations:—

The Matriculation Examination.
The First University Examination.
The First Examination in Medicine.
The Second Examination in Medicine.
The Third Examination in Medicine.
The Examination for the M.B., B.Ch., B.A.O. Degrees.

The Course of Medical Studies shall be divided into five Periods of one Medical Year each.

Candidates shall furnish proper Certificates of attendance at the several Courses of Medical Instruction prescribed for the different years of the curriculum.

No such certificate will be received unless it attests a *boná fide* attendance at three-fourths of the whole Course. *Students are reminded that certificates of attendance at Night Lectures will not be accepted.*

No Certificates of instruction in any of the Courses of Medical Studies, either in connection with Lectures or Hospitals, can be received, unless issued by an Institution which has been formally recognised by the Senate.

Attention is directed to the fact that Certificates for attendance at Courses in recognised Institutions are accepted only when substantially in accordance with the requirements of the University.

The prescribed courses in Experimental Physics, Chemistry, Biology, Anatomy and Physiology must be attended in Institutions provided with the appliances required for the performance by the Students of proper Experimental Courses and Practical Work in these subjects.

Where Certificates in a special department (Fever, Mental Diseases, Ophthalmology, etc.) are presented, they must be signed by the Physician or Surgeon in charge of such department.

THE EXAMINATION FOR THE M.B., B.CH., B.A.O. DEGREES.

Candidates may present themselves for this Examination after an interval of such period, not being less than one Medical Year from the time of passing the Third Examination in Medicine, as the Senate may from time to time prescribe, provided they shall have completed the entire Medical Curriculum.

Printed forms of application for admission to this Examination may be had from "The Secretaries, the Royal University of Ireland, Dublin," after February 11 for the Spring Examination, and after July 15 for the Autumn Examination.

This Examination consists of three parts:—

(*a*) Medicine, Theorotical and Clinical, including Therapeutics, Mental Diseases, Medical Jurisprudence, Sanitary Science, and Medical Pathology.

(*b*) Surgery, Theoretical, Clinical, and Operative, including the use of Instruments and Appliances; Surgical Anatomy; Ophthalmology and Otology,* Surgical Pathology.

(*c*) Midwifery and Diseases of Women and Children.

All Candidates must enter for and go through the entire Examination, but a Candidate may be adjudged to have passed in any of the foregoing parts in which he satisfies the Examiners.

Upon completing satisfactorily his Examination in all three divisions, the Candidate, in addition to the parchment Diploma recording his admission to the M.B., B.Ch., B.A.O. Degrees, will receive a Certificate of having passed a Qualifying Examination in the subjects of Medicine, Surgery, and Midwifery.

The fee for this Certificate is *Ten Pounds*, which must be paid before admission to these Degrees.

HONOURS.

There are Special Examinations for Honours in connection with—

The First Examination in Medicine.
The Second Examination in Medicine.
The Third Examination in Medicine.
The M.B., B.Ch., B.A.O. Degrees Examination.

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* Candidates at this Examination must exhibit reasonable proficiency in the use of the Ophthalmoscope and Laryngoscope.

The Examinations for Honours are held subsequently to the corresponding Pass Examinations.

DIPLOMA IN PUBLIC HEALTH.

This Diploma is conferred only on Graduates in Medicine of the University.

Candidates may present themselves for this Examination after an interval of twelve months from the time of obtaining the M.B., B.Ch., B.A.O. Degrees.

Printed forms of application for admission to this Examination may be had from "The Secretaries, the Royal University of Ireland, Dublin."

Every Candidate must, when entering for the Examination, produce:—[a]

(*a*) A Certificate of having, *after obtaining the M.B., B.Ch., B.A.O. Degrees*, attended during a period of six months Practical Instruction in a Laboratory approved by the University. The nature of this course is fully indicated by the detailed Syllabus of the Examinations in Physics, Climatology, Chemistry, Microscopy, Bacteriology, etc.

(*b*) A Certificate of having, *after obtaining the M.B., B.Ch., B.A.O. Degrees*, during six months (of which at least three months shall be distinct and separate from the period of laboratory instruction required under (*a*)) been diligently engaged in acquiring a practical knowledge of the duties, routine and special, of Public Health Administration, under the supervision of:—

(1) In England and Wales, the Medical Officer of Health of a County or of a single Sanitary District having a population of not less than 50,000, or a Medical Officer of Health devoting his whole time to Public Health Work; or

(2) In Scotland, a Medical Officer of Health of a County or Counties, or of one or more Sanitary Districts having a population of not less than 30,000; or

(3) In Ireland, a Medical Superintendent Officer of Health of a District or Districts having a population of not less than 30,000; or

(4) A Medical Officer of Health who is also a Teacher in the Department of Public Health of a recognised Medical School; or

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[a] These rules (*a*), (*b*), shall not apply to Medical Practitioners registered or entitled to be registered, on or before January 1, 1890.

(5) A Sanitary Staff Officer of the Royal Army Medical Corps having charge of an Army Corps, District, or Command, recognised for this purpose by the General Medical Council; or

(6) In the British Dominions outside the United Kingdom, a Medical Officer of Health of a Sanitary District having a population of not less than 30,000, who himself holds a registrable Diploma in Public Health.

⁂ The certificate of an Assistant Medical Officer of Health of a County or of a single Sanitary District having a population of not less than 50,000 may be accepted as evidence under *Rule* (*b*), provided the Medical Officer of Health of the County or District in question permits the Assistant Officer to give the necessary instruction and to issue Certificates. Provided that the period of six months may be reduced to a period of three months (which shall be distinct and separate from the period of laboratory instruction required under *Rule* (*a*)), in the case of any Candidate who produces evidence that, after obtaining a registrable Qualification, he has during three months attended a course or courses of instruction in Sanitary Law, Sanitary Engineering, Vital Statistics, and other subjects bearing on Public Health Administration, given by a Teacher or Teachers in the Department of Public Health of a recognised Medical School.

Every Candidate must produce evidence that, after obtaining a registrable Qualification, he has attended during three months the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the Study of Methods of Administration.

Candidates at this Examination must answer in the following subjects:—

I. Physics.
II. Chemistry.
III. Meteorology.
IV. Sanitary Engineering and Architecture.
V. Bacteriology.
VI. Hygiene, Sanitary Law, and Vital Statistics.

There will be a practical examination, both chemical and microscopical, at which the candidate must make at least qualitative analyses.

In connection with the subjects of Sanitary Engineering and Architecture, candidates will be required to draw up a Sanitary

Report upon the condition of dwelling-houses or other buildings selected for the purpose, and to read plans, scales, sections, etc.

The Examination consists of two parts, which may be passed separately or together.

Part I. comprises the following subjects:—

Physics.
Chemistry.
Meteorology.
Sanitary Engineering and Architecture.

Part II. comprises the following subjects:—

Bacteriology.
Hygiene, Sanitary Law, and Vital Statistics.

The Examination in each part is oral and practical as well as written.

DIPLOMA IN MENTAL DISEASES.

This Diploma is conferred only on Graduates in Medicine of the University.

Printed forms of application for admission to this Examination may be had from "The Secretaries, the Royal University of Ireland, Dublin."

The subjects for this Examination are those prescribed for the Hutchinson Stewart Scholarship for proficiency in the treatment of Mental Diseases.

BELFAST.

QUEEN'S COLLEGE.

Clinical instruction is given at the Belfast Royal Victoria Hospital. The Ulster Hospital for Diseases of Women and Children, the Belfast Maternity Hospital, the Belfast Ophthalmic Hospital, the Ulster Eye, Ear, and Throat Hospital, the Belfast District Lunatic Asylum, and the Belfast Hospital for Sick Children are open to students.

A pamphlet containing full information can be had free on application to the Registrar, Queen's College, Belfast.

CORK.

QUEEN'S COLLEGE.

Clinical instruction is given at the North and South Infirmaries (each 100 beds). Students also can attend the Mercy Hospital (60 beds), the Cork Union Hospital, the County and City of Cork

Lying-in-Hospital, the Maternity, the Hospital for Diseases of Women and Children, the Fever Hospital, the Ophthalmic and Aural Hospital, and the Eglinton Lunatic Asylum. The session at Queen's College extends from October to April inclusive (twenty-seven weeks), but the hospitals are open to students in May, June, and July also, and arrangements have been made for the delivery of some of the three months' Courses of Lectures during the months of April, May and June.

GALWAY.

QUEEN'S COLLEGE.

Clinical instruction is given at the Galway County Infirmary and the Galway Town Hospital.

Prizes.—Attached are eight scholarships of the value of £25 each. The Council may award Exhibitions to matriculated students at the examinations for junior scholarship. All scholarships and exhibitions of the second, third, and fourth years may be competed for by students who have attained the requisite standing in any medical school recognised by the College Council, and have passed the Matriculation Examination in the College, or in the Royal University of Ireland.

III.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, IRELAND.

REGULATIONS FOR THE EXAMINATIONS IN MEDICINE, SURGERY, AND MIDWIFERY REQUIRED FOR REGISTRATION UNDER THE MEDICAL ACT, 1886.

These Regulations are obligatory on all Candidates commencing their Studies on or after October 1st, 1902.

PRELIMINARY EXAMINATION AND REGISTRATION.

The General Medical Council requires that every Candidate shall produce evidence—

(*a*) Of having, before entering on medical studies, passed a Preliminary Examination in general education recognised by the General Medical Council; and (*b*) Of having been registered by that Council as a Student in Medicine, according to Regulations, which may be obtained on application at the office of the General Medical Council, 299 Oxford Street, London, W., or its Branches—Dublin, 35 Dawson Street; Edinburgh, 54 George Square.

Each Candidate before receiving his Diplomas must produce a Registrar's Certificate, or other satisfactory evidence, that he has attained the age of twenty-one years.

PROFESSIONAL EXAMINATIONS.

Every Candidate is required to pass four Professional Examinations.

Candidates will be admissible to the various Examinations as under :—

First Professional Examination, not earlier than the end of the first winter session.

Second Professional Examination, not earlier than the end of the second winter session.

Third Professional Examination, not earlier than the end of the third year of medical study.

Final Professional Examination, not earlier than the end of the fourth year of medical study; but it cannot be completed till the end of the fifth year of medical study.

No Candidate shall be admitted to any Examination within three months of his rejection in the subjects of that Examination by this or any other Licensing Body.

FIRST PROFESSIONAL EXAMINATION.

FEES.

The Fee for this Examination is £15 15s.

The subjects of the First Professional Examination are :—

Division A.—Chemistry and Physics.

Division B.—Biology.

The Examination in Chemistry includes a Practical Examination in the Laboratory.

Every Candidate is required to produce evidence—

(1) Of having passed a satisfactory Preliminary Examination in General Education; and

(2) Of having diligently attended Courses of Instruction in

Division A.—
- (*a*) Theoretical Chemistry, six months.
- (*b*) Practical Chemistry, three months.
- (*c*) Physics, three months.

Division B.— (*d*) Biology, three months.

Candidates are recommended to present themselves in all the Subjects of the First Professional Examination at one time, but they may present themselves either in Division A or Division B provided that they have completed the curriculum as far as it concerns the "Division" in which they present themselves for Examination.

SECOND PROFESSIONAL EXAMINATION.

FEES.

The Fee for this Examination is £10 10s.

The subjects of the Second Professional Examination are :—

Division A.—Anatomy.

Division B.—Physiology and Histology.

Before admission to the Second Professional Examination, every Candidate must have passed in the subjects of the First Professional Examination; and is required to produce evidence of having diligently attended :—

(*a*) The Practice of a Medico-Chirurgical Hospital for nine months.

(*b*) Anatomical Dissections; two courses of six months each; or one course of six months and two courses of three months.

Lectures in :—

(*c*) Anatomy, six months.

(*d*) Physiology, six months.

(*e*) Practical Physiology and Histology, three months.

THIRD PROFESSIONAL EXAMINATION.

FEES.

The Fee for this Examination is £9 9s.

The subjects of the Third Professional Examination are :—

Division A.—Pathology.

Division B.—Materia Medica, Pharmacy, and Therapeutics.

Division C.—Forensic Medicine and Public Health.

Before admission to the Third Professional Examination, every Candidate must have passed in the subjects of the Second Professional Examination, and is required to produce evidence of having diligently attended courses of instruction in :—

(*a*) The Practice of a Medico-Chirurgical Hospital, nine months.

(*b*) Pathology.

(1) A Systematic Course of three months.

(2) A Laboratory Course of practical instruction in a recognised Medical School, three months.

These Courses may be taken concurrently.

(*c*) Materia Medica, Pharmacy, and Therapeutics, three months.

(*d*) Public Health and Forensic Medicine, three months.

Candidates may present themselves in any one or more "Divisions," but Certificates of study in all three Divisions must be produced before Candidates will be permitted to present themselves for Examination in any one Division..

FINAL PROFESSIONAL EXAMINATION.

FEES.

The Fee for this Examination is £6 6s.

The subjects of the Final Professional Examination are :—

Division A.—Medicine, including Fevers, Mental Diseases, and Diseases of Children.

Division B.—Surgery, including Operative Surgery and Ophthalmic Surgery.

Division C.—Midwifery and Gynæcology, Vaccination, and Diseases of New-born Children.

Before admission to the Final Professional Examination, every Candidate must have passed in the subjects of the Third Professional Examination, and is required to produce evidence of having diligently attended :—

Division A.—The Practice of a Medico-Chirurgical Hospital for nine months (unless such evidence has been previously produced for admission in Division B).

The Practice of a recognised Fever Hospital, or the Fever Wards of a recognised Clinical Hospital, three months.

Clinical Instruction in Mental Diseases, one month (12 attendances).

Lectures on Medicine, six months at a recognised Medical School.

Of having diligently performed the duties of Medical Clinical Clerk in a recognised Hospital for three months.

Division B.—The Practice of a Medico-Chirurgical Hospital, nine months (unless such evidence has been previously produced for admission in Division A).

Clinical Instruction in Ophthalmic and Aural Surgery, three months.

Lectures on Surgery, six months at a recognised Medical School.

Instruction in Operative Surgery, three months at a recognised Medical School.

Evidence of having diligently performed the duties of Surgical Dresser in a recognised Hospital for three months.

Division C.—Midwifery Hospital, or Maternity, including evidence of having been present at twenty labours, six months.

Instruction on Vaccination; six attendances to be certified by a Public Vaccinator.[a]

Lectures on Midwifery (including Diseases Peculiar to Women and to New-born Children), six months at a recognised Medical School.

Candidates are recommended to present themselves in all the subjects of the Final Examination at one time; but a Candidate at or after the end of the fourth year may present himself in any one of the Divisions A, B, or C, provided he has completed his Curriculum as far as concerns the Division in which he presents himself. The Examination in at least one of the Divisions must be deferred till the end of the fifth year.

Before completing the Final Examination a Candidate must have passed four years in Medical Studies other than those for the First Professional Examination.

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[a] By a Regulation of the English Privy Council no one can be appointed a public vaccinator in England who does not produce a certificate of proficiency in vaccination from a person authorised by the English Privy Council to grant same.

Candidates must have passed in all the subjects of the Final Examination before any Diploma can be granted.

Each Candidate before receiving his Diplomas must produce a Registrar's Certificate, or other satisfactory evidence, that he has attained the age of twenty-one years.

EXEMPTIONS.

Candidates who have passed in any of the required subjects at Examinations conducted by any Licensing Body recognised by the Royal College of Physicians and the Royal College of Surgeons may, at the discretion of the Committee of Management, be exempted from further examination in such subjects under these regulations.

Certificate of Study.

All Lecture Certificates shall be signed by the Lecturer or Clinical Teacher. In case of absence or illness of the Lecturer or Teacher the Registrar or other duly accredited official shall sign for such absent Lecturer or Teacher, stating the reason for his so doing.

Winter Courses shall consist of not less than 50 Lectures, and Summer Courses of not less than 30 Lectures.

No Lecture Certificate shall be received unless the number of attendances certified thereon shall be at least *two-thirds* of these numbers.

As regards Medical and Surgical Hospital Certificates, the number of daily attendances certified shall not be less than 80 for the Winter Session, and 40 for the Summer Session.

DATES OF EXAMINATIONS.

(For the Conjoint Diploma of the Royal Colleges of Physicians and Surgeons of Ireland).

Preliminary	- March, June, and October.
First Professional	- January, April, June, and October.
Second ,,	- January, April, July, and October.
Third ,,	- January, April, July, and October.
Final Examination	- January, April, July, and October.

REGULATIONS FOR CANDIDATES FOR THE DIPLOMA IN PUBLIC HEALTH.

The following Regulations are compulsory on all Candidates presenting themselves for Examination after January 1st, 1903, except as undernoted.

Stated Examinations for the Diploma in Public Health commence on the first Monday of the months of February, May, July, and November.

A special Examination for the Diploma may, at the discretion of the Committee of Management, be obtained—except during the months of August and September—on application at least one fortnight before the date of the proposed Examination, and payment of £15 15s. in addition to the ordinary Fees mentioned below.

Every Candidate for the Diploma in Public Health must be a Registered Medical Practitioner. He must return his name to the Secretary of the Committee of Management under the Conjoint Scheme, Royal College of Physicians, Dublin, one fortnight before the Examination, and lodge with him a Testimonial of Character from a Fellow of either of the Colleges, or of the Royal Colleges of Physicians or Surgeons of London or Edinburgh, together with certificates of the prescribed course of study.

Candidates registered as Medical Practitioners or entitled to be so registered after January 1st, 1890, must comply with certain Resolutions and Rules, adopted by the General Medical Council on December 2nd, 1902, May 29th and November 30th, 1903, May 31st, 1904, and May 25th and 26th, 1905, in regard to Diplomas in Public Health.

⁂ Certain of the *Rules* as to study shall not apply to Medical Practitioners registered, or entitled to be registered, on or before January 1st, 1890.

The Fee for the Examination is Ten Guineas, which must be lodged in the Ulster Bank, Dublin, to the credit of the Committee of Management. Fees are not returned to any Candidate who withdraws from, or is rejected at, any Examination. The Fee for re-examination is Five Guineas.

The Examination for the Diploma in Public Health comprises the following subjects:—Chemistry and Physics, Engineering and Architecture, Meteorology, Sanitary Law, Vital Statistics, Hygiene, Bacteriology.

IV.

APOTHECARIES' HALL IN IRELAND.

The First, Second, and Third Professional Examinations are held four times a year—viz., commencing the third Monday in January, April, July, and October.

The Final Examinations are held in January and July.

The Fees payable for each Examination are as follow:—

First Professional	£5	5	0
Second ,,	5	5	0
Third ,,	5	5	0
Final Examination	6	6	0

A Candidate is allowed for each Professional Examination which he has completed at any other Licensing Body, except the Final.

Ladies who comply with the regulations will be admitted to these examinations.

Candidates may be admitted to a Special Examination, under special circumstances, which must be laid before the Examination Committee. If the Candidate's application be granted, an extra fee of Ten Guineas over and above the full fee is required.

Candidates already on the Register will receive the Diploma of the Hall, on passing an Examination in the subjects which are not covered by their previous qualifications, and on paying a fee of Ten Guineas. If Medicine or Surgery is required, additional fees will be charged.

COURSE OF STUDY FOR THE DIPLOMA.

Candidates who desire to obtain the Letters Testimonial of the Apothecaries' Hall in Ireland must, before proceeding to the Final Examination, produce evidence of having been registered as a Medical Student for 57 months; also of having attended Courses of Instruction as follows:—

Winter Courses of Six Months.

One Course each of the following:—

Anatomy (Lectures).
Chemistry—Theoretical.
Midwifery.
Practice of Medicine.
Physiology, or Institutes of Medicine.
Surgery.
Dissections, two courses of six months each.

Courses of Three Months.

One Course of each of the following:—

- Materia Medica.
- Medical Jurisprudence.
- Chemistry—Practical.
- Practical Physiology and Histology.
- Operative Surgery.
- Physics.
- Clinical Ophthalmology.
- Biology.
- Clinical Instruction in Mental Disease.
- Pathology.
- Vaccination.

Medico-Chirurgical Hospital, twenty-seven months, to be distributed at the Student's own discretion over the last four years of his study. The Candidate may substitute for nine months of this Hospital Attendance six months as a Resident Pupil. He will be required to present a certificate of having taken notes of at least six Medical and six Surgical cases recorded under the supervision respectively of a Physician and of a Surgeon of his Hospital.

Three months' study of Fever—which may be included in his twenty-seven months' Hospital Attendance—in a Hospital containing Fever Wards, and having taken notes of at least five cases of Fever.

Six months' Practical Midwifery and Diseases of Women during the Winter or Summer of the third or the fourth year, at a recognised Lying-in Hospital or Maternity.

Three months' Practical Pharmacy, in a recognised Clinical Hospital or a recognised School of Pharmacy, or a year in the Compounding Department of a Licentiate Apothecary or a Pharmaceutical Chemist.

Each Candidate, before receiving his Diploma, must produce evidence that he has attained the age of twenty-one years.

Licentiates of this Hall are entitled to enter as Candidates for the Fellowship of the Edinburgh Royal College of Surgeons.

EXAMINATIONS FOR THE DIPLOMA.

All information relative to the Examinations may be obtained from the Registrar of the Apothecaries' Hall, 40 Mary Street, Dublin.

DENTAL EDUCATION AND EXAMINATIONS IN IRELAND.

UNIVERSITY OF DUBLIN.

DEGREE AND LICENCE IN DENTAL SCIENCE.

The University of Dublin grants both a Degree and a Licence in Dental Science. To obtain the former, Candidates must have taken a Degree in Arts; the Licence is awarded to duly qualified persons who have passed the Public Entrance Examination of Trinity College, Dublin, and a Junior Freshman Term Examination, or who have passed the Special Preliminary Examination.

LICENCE IN DENTAL SCIENCE.

(*L. Dent. Sc., Univ. Dub.*)

Before passing the above-named Examinations in Trinity College, or immediately after doing so, Students are advised to begin their three years' Course of instruction in *Dental Mechanics*, and to devote all their time during one year to this subject. Dental Mechanics may be learnt in the Mechanical Department of the Dental Hospital, where a Fee of £100 is charged, or from a Registered Dentist, in which case the Fee charged is a matter of arrangement.

Having passed the Examinations in Trinity College, as indicated above, Students should register themselves as Dental Students at the Registrar's Office in the Medical School, and commence the prescribed course of study, of which particulars may be obtained from the Registrar of the School of Physic in Ireland, in addition to continuing their work in Dental Mechanics.

DEGREE IN DENTAL SCIENCE.

(*M. Dent. Sc., Univ. Dub.*)

The Course of study recommended in the case of Candidates for the Degree in Dental Science is the same as that for the Licence, with the addition of—

Pathology Lectures	.. ..	£2	2	0
Pathology, Practical	.. ..	2	2	0
Bacteriology	.. ..	3	3	0
		£7	7	0

which should be taken out in the fourth or fifth year.

Before presenting themselves for the Final Examination for the Degree, Candidates must—(1) have passed the Examination for the B.A. Degree; (2) have attended satisfactorily the Courses indicated above; and (3) must have had their names on the books either of the Medical School or of the Dental School, for a period of not less than five years. They must also have passed the previous Dental Examination in all its parts, and have attained the age of twenty-one years.

The subjects for the Degree Examination are—

Medicine.
Surgery.
Pathology.
Bacteriology.
Dental Anatomy, Human and Comparative.
Dental Microscopy.
Dental Surgery and Pathology.
Dental Mechanics.
Orthodontia.

The fee for the Examination is £5.

Examinations will be held on Nov. 11, 1907; March 16, June 22, 1908. Notice must be given to the Registrar of the School of Physic not later than a week before the Examination begins.

The Board of Trinity College is willing to consider applications, on the part of qualified practitioners and others, for recognition of Courses taken previous to the establishment of the Degree and Licence, in case they proceed to complete the Course.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DIPLOMA IN DENTAL SURGERY.

The Royal College of Surgeons in Ireland grants Diplomas in Dental Surgery under conditions of which the following is a synopsis:—

The Candidate must be twenty-one years of age before being admitted to the Final part of the Examination.

The Candidate must have passed three Examinations.

1. Preliminary (identical with the Medical Preliminary).
2. Primary Dental. Fee, £10 10s. (This Examination is much the same as the Second Conjoint Professional.)

3. Final Dental Examination. Fee, £10 10s. Candidates are examined in Dental Surgery and Pathology, and in Dental Mechanics, including the Metallurgy of the workshop.

   Candidates are required to do gold fillings, and construct mechanical work in the presence of the Examiners.

The Certificates required may be divided into General and Special.

1. The General Certificates required are about the same as those required by the Medical Student for the Second Conjoint Professional Examination.

The Special Certificates may be subdivided into—

1. Dental Hospital. 2. Practical Mechanical Dentistry.
    1. Dental Hospital. Two years' attendance, with Lectures in Dental Surgery and Pathology and in Dental Mechanics. Fee, £28 7s.
    2. Practical Mechanical Dentistry. Three years' instruction from a Registered Dentist. The fee for this is variable, but may be set down at from £50 to £150.

Large reductions in the Special Certificates required are made in the cases of qualified Medical Practitioners.[a]

As regards Dental Hospital practice, full information is contained in the Calendar for 1907–08 of the School of Dentistry in connection with the Incorporated Dental Hospital of Ireland, Lincoln Place, Dublin. The Calendar may be obtained on application to the Dean, Dr. A. W. W. Baker.

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[a] Fuller particulars can be obtained by application to the Registrar, Royal College of Surgeons, St. Stephen's Green, Dublin.

PAYMENT FOR BIRTH CERTIFICATES.

HEREAFTER every baby born in Michigan will cost the county into which it has come 75 cents. A law passed by the Legislature last spring provides that all physicians, midwives, or nurses who file their birth certificates, properly made out in black ink, with the Registrar within ten days after the birth, will receive a compensation of 50 cents. for each certificate. In addition to the compensation for the physicians or others making out the certificates, the Registrars receive 25 cents for their services in recording and forwarding the same to the Department at Lansing.—*Medical Record*, N.Y., Sept. 14, 1907.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by SIR JOHN MOORE.

VITAL STATISTICS

For four weeks ending Saturday, September 7, 1907.

IRELAND.

THE average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending September 7, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 16.8 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, September 7, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality:—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c	Week ending				Average Rate for 4 weeks
	Aug. 17	Aug. 24	Aug. 31	Sept. 7			Aug. 17	Aug. 24	Aug. 31	Sept. 7	
22 Town Districts	**15.3**	**15.6**	**16.0**	**16.8**	**15.9**	**Lisburn**	**4.5**	**9.1**	**13.6**	**9.1**	**9.1**
Armagh	**27.5**	**6.9**	**13.7**	**27.5**	**18.9**	**Londonderry**	**25.8**	**14.7**	**17.2**	**7.4**	**16.3**
Ballymena	**14.4**	**9.6**	**9.6**	**19.2**	**13.2**	**Lurgan**	—	**26.6**	**8.9**	**22.1**	**14.4**
Belfast	**14.2**	**15.1**	**12.7**	**14.8**	**14.2**	**Newry**	**12.6**	**42.0**	**21.0**	**16.8**	**23.1**
Clonmel	**20.5**	**15.4**	**5.1**	**20.5**	**15.4**	**Newtownards**	**11.4**	**11.4**	**11.4**	**11.4**	**11.4**
Cork	**13.7**	**16.4**	**19.2**	**16.4**	**16.4**	**Portadown**	**10.3**	**5.2**	**31.0**	**20.7**	**16.8**
Drogheda	**8.2**	**12.3**	**12.3**	**20.4**	**13.3**	**Queenstown**	**13.2**	**33.0**	**26.4**	**33.0**	**26.4**
Dublin (Reg. Area)	**17.8**	**15.7**	**18.6**	**20.7**	**18.2**	**Sligo**	—	**4.8**	**14.4**	**9.6**	**7.2**
Dundalk	**8.0**	**16.0**	**12.0**	**16.0**	**13.0**	**Tralee**	—	**21.1**	**26.4**	**5.3**	**13.2**
Galway	**7.8**	**11.7**	**27.2**	**35.0**	**20.4**	**Waterford**	**13.6**	**15.6**	**13.6**	**3.9**	**11.7**
Kilkenny	**4.9**	**14.7**	**34.3**	**9.8**	**15.9**	**Wexford**	**18.7**	**14.0**	**14.0**	**14.0**	**15.2**
Limerick	**19.1**	**17.8**	**8.2**	**12.3**	**14.4**						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, September 7, 1907, were equal to an annual rate of 1.7 per 1,000, the rates varying from 0.0 in twelve of the districts to 7.8 in Galway—the 9 deaths from all causes registered in that district including one each from diphtheria and *pyrexia* (origin uncertain). Among the 105 deaths from all causes registered in Belfast are 4 from diphtheria, 5 from enteric fever, 5 from diarrhœal diseases, 3 from cerebro-spinal fever, and 2 returned as from *cerebro-spinal meningitis*. The 24 deaths registered in Cork include one from scarlet fever and 2 from diarrhœal diseases. One of the 4 deaths registered in Dundalk is from diphtheria, and one of the 2 deaths from all causes in Lisburn is from enteric fever.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, September 7, 1907, amounted to 247—126 boys and 121 girls; and the deaths to 159—81 males and 78 females.

DEATHS.

The deaths registered represent an annual rate of mortality of 21.2 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the Area, the rate was 20.7 per 1,000. During the thirty-six weeks ending with Saturday, September 7, the death-rate averaged 25.3, and was 0.1 below the mean rate for the corresponding portions of the ten years, 1897–1906.

Of the 159 deaths registered, 3 were from measles, one death each from scarlet fever and typhus, 2 from whooping-cough, 5 from diarrhœal diseases, 2 from influenza, and one death from cerebro-spinal fever. In each of the 3 preceding weeks, deaths from measles were 7, 2, and 7; deaths from scarlet fever were 0, 0, and 0; deaths from typhus were 0, 0, and 0; deaths from whooping-cough were 3, 4, and 0; deaths from diarrhœal diseases were 6, 4, and 8; deaths from influenza were 0, one, and one, and deaths from cerebro-spinal fever were one, one, and 0.

There were 2 deaths from broncho-pneumonia and 4 from *pneumonia* (not defined).

All forms of tuberculous disease caused 35 deaths, including 12 deaths from tubercular phthisis, 13 from *phthisis*, 4 from tubercular meningitis, and 6 from other forms of tuberculous disease. In the 3 preceding weeks, deaths from all forms of the disease numbered 26, 26, and 22, respectively.

Carcinoma caused 4 deaths and cancer (undefined) 3 deaths.

The deaths of 5 infants were ascribed to prematurity.

Thirteen deaths were caused by diseases of the brain and nervous system, including 3 from meningitis (2 being those of children under 5 years of age) and 4 (all of children under 5 years of age) from *convulsions.*

Diseases of the heart and blood-vessels caused 30 deaths, and bronchitis caused 10 deaths.

There were 4 accidental deaths, including one, that of an infant under one year of age, from overlaying in bed.

In 7 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 5 infants under one year of age and the death of one person aged 68 years.

Forty-six of the persons whose deaths were registered during the week ended Saturday, September 7, were under 5 years of age (29 being infants under one year, of whom 11 were under one month old), and 51 were aged 60 years and upwards, including 27 persons aged 70 and upwards, of whom 9 were octogenarians.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; the Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended September 7, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	Aug. 17	-	*	*	5	1	-	8	-	3	11	15	1	*	*	-	44
	Aug. 24	-	*	*	3	-	-	8	-	-	13	15	-	*	*	*	39
	Aug. 31	-	*	*	3	-	-	8	-	2	3	14	-	*	*	*	25
	Sept. 7	-	*	*	5	1	-	1	-	3	3	13	1	*	*	*	27
Rathmines and Rathgar Urban District	Aug. 17	-	*	*	4	-	-	-	-	-	-	-	-	*	*	-	4
	Aug. 24	-	*	*	1	-	-	-	-	-	1	-	-	*	*	-	2
	Aug. 31	-	*	*	1	-	-	-	-	-	1	-	-	*	*	-	2
	Sept. 7	-	*	*	-	-	-	-	-	-	2	-	-	*	*	-	2
Pembroke Urban District	Aug. 17	-	9	-	-	-	-	-	-	-	-	-	-	*	2	-	11
	Aug. 24	-	12	-	-	-	-	-	-	1	1	-	-	*	-	-	14
	Aug. 31	-	5	-	-	-	-	-	-	-	-	2	-	*	-	-	7
	Sept. 7	-	9	-	-	-	-	-	-	-	-	-	-	*	-	-	9
Blackrock Urban District	Aug. 17	-	*	*	-	-	-	1	-	-	-	-	-	*	*	-	1
	Aug. 24	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Aug. 31	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Sept. 7	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
Kingstown Urban District	Aug. 17	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Aug. 24	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Aug. 31	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Sept. 7	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
City of Belfast	Aug. 17	-	*	*	9	-	-	6	-	5	6	6	2	*	*	3	37
	Aug. 24	-	*	*	9	-	-	5	-	8	15	11	2	*	*	2	52
	Aug. 31	-	*	*	10	-	-	9	2	10	6	6	-	*	*	4	47
	Sept. 7.	-	*	*	6	-	-	4	2	8	14	4	-	*	*	5	43

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended September 7, 1907, 2 cases of measles were admitted into hospital, one was discharged, and 11 cases remained under treatment at its close.

Six cases of scarlet fever were admitted to hospital, 3 were discharged, there was one death, and 35 cases remained under treatment at the close of the week. This number is exclusive of

6 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was discharged from hospital, and there was one death. No case remained under treatment at the close of the week.

Four cases of diphtheria were admitted to hospital, 7 were discharged, and 20 patients remained under treatment at the close of the week.

Three cases of enteric fever were admitted to hospital, 4 were discharged, there was one death, and 34 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 5 cases of pneumonia were admitted to hospital, 4 were discharged, and 23 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, September 7, in 76 large English towns, including London (in which the rate was 11.8), was equal to an average annual death-rate of 12.3 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 13.6 per 1,000, the rate for Glasgow being 14.8 and for Edinburgh 13.0

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended September 7. From this Report it appears that of a total of 40 cases notified 17 were of scarlet fever, 5 of diphtheria, 5 of enteric fever, and 5 of erysipelas. Among the 261 cases of infectious diseases in hospital at the close of the week were 85 cases of scarlet fever, 37 of whooping-cough, 31 of measles, 27 of diphtheria, 13 of enteric fever, and 8 of erysipelas.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of August,* 1907.

Mean Height of Barometer, - - -	29.927 inches.
Maximal Height of Barometer (21st, at 9 p.m.),	30.383 „
Minimal Height of Barometer (4th, at 9 a.m.),	29.517 „
Mean Dry-bulb Temperature, - - -	57.8°.
Mean Wet-bulb Temperature, - - -	54.5°.
Mean Dew-point Temperature, - - -	51.6°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.383 inch.
Mean Humidity, - - - -	80.6 per cent.
Highest Temperature in Shade (on 13th), -	73.1°.
Lowest Temperature in Shade (on 30th), -	44.1°.
Lowest Temperature on Grass (Radiation), (30th),	40.7°.
Mean Amount of Cloud, - - -	61.6 per cent.
Rainfall (on 19 days), - - - -	2.230 inches.
Greatest Daily Rainfall (on 29th), - -	.498 inch.
General Directions of Wind, - - -	W., S.W., N.W.

Remarks.

While August partook of the changeable character of its predecessors, it was not an unfavourable month. The mean temperature was 4.4° below that of the exceptionally warm August of 1906, and also about one degree below the average for August in the 35 years, 1871–1905. The wind blew with great persistence from westerly (S.W., W. & N.W.) points, and often with considearble force. More than six-tenths of the sky was clouded over, the percentage of cloud being greater—contrary to the rule—at 9 p.m. (63.5 per cent.) than at 9 a.m. (59.7 per cent.).

In Dublin the arithmetical mean temperature (58.8°) was below the average (59.7°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 57.8°. In the forty-three years ending with 1907, August was coldest in 1881 (M. T. = 57.0°), and warmest in 1899 (M. T. = 63.4°). In 1906 the M. T. was 63.2°.

The mean height of the barometer was 29.927 inches, or 0.030 inch above the corrected average value for August—namely, 29.897 inches. The mercury rose to 30.383 inches at 9 p.m. of the 21st, and fell to 29.517 inches at 9 a.m. of the 4th. The observed range of atmospheric pressure was, therefore, .866 inch.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 57.8°. It was

0.9° below the value for July, 1907. Using the formula, *Mean Temp.* = *Min.* + (*Max.*— *Min.* × .47), the mean temperature was 58.4°, or 0.9° below the average mean temperature for August, calculated in the same way, in the thirty-five years 1871–1905, inclusive (59.3°). The arithmetical mean of the maximal and minimal readings was 58.8°, compared with a thirty-five years' average of 59.7°. On the 13th, the thermometer in the screen rose to 73.1°—wind, S.S.W.; on the 30th, the temperature fell to 44.1°—wind, N.W. The minimum on the grass was 40.7°, also on the 30th.

The rainfall was 2.230 inches on 19 days. The average rainfall for August in the thirty-five years 1871–1905, inclusive, was 3.24 inches, and the average number of rainy days was 18. The rainfall, therefore, was below the average, while the rainy days were slightly above the average. In 1900, the rainfall in August was very large—5.871 inches on 17 days; in 1889, also, 5.747 inches were registered on 22 days. On the other hand, in 1884, only .777 inch was measured on 8 days. August, 1905, established a record for rainfall in this month in Dublin, for the measurement was 7.019 inches on 22 days, 3.436 inches having fallen on the 25th. In 1906, the rainfall was 1.761 inches on 17 days.

High winds were noted on 15 days, but attained the force of a gale on only one day, the 16th, and then only for a short time. Temperature reached 70° in the screen on only one day, the 13th compared with 7 days in August, 1901, only one day in both 1902 and 1903, 9 days in 1904, one day in 1905, and 17 days in 1906. A solar halo was seen on the 24th. Hail fell on the 15th. There was fog on the 30th. Lightning was seen on the night of the 9th, and aurora borealis at 9 p.m. of the 31st.

The rainfall in Dublin during the eight months ending August 31st amounted to 16.588 inches on 146 days, compared with 15.425 inches on 139 days in 1906, 18.041 inches on 131 days in 1905, 16.808 inches on 135 days in 1904, 21.872 inches on 157 days in 1903, 18.456 inches on 133 days in 1902, 14.384 inches on 106 days in 1901, 9.455 inches on 96 days during the same period in 1887, and a thirty-five years' average (1871–1905) of 17.95 inches on 131 days.

At the Normal Climatological Station in Trinity College, Dublin, Mr. J. E. W. Flood reports that the mean height of the barometer was 29.929 inches. The range of atmospheric pressure was between 30.386 inches at 9 p.m. of the 21st and 29.516 inches at 9 a.m. of the 4th. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 58.7°. The arithmetical mean of the daily maximal and minimal temperatures was 58.9°. The screened thermometers rose to 73.8° on the 13th, and fell to 43.1° on the 30th. On the 24th the grass minimum was 37.3° On the 28th the black bulb *in vacuo* rose to 133.6°. Rain fell on 19 days to the amount of 2.215 inches, the greatest fall in 24 hours being .481 inch on the 29th. The duration of bright sunshine, according to the Campbell-Stokes recorder, was 151.4 hours, of which 9.7 hours occurred on the 6th, 9.4 hours on the 10th, and 9.4 hours on the 27th. In August, 1904, there was 183.75 hours of bright sunshine, in 1905, 121.9 hours, and in 1906, 176.9 hours. The mean earth-temperatures were—at 1 ft., 59.1°; at 4 ft., 57.3°. The one-foot thermometer ranged between 60.7° on the 14th and 56.9° on the 30th. The four-feet thermometer ranged from 58.0° on the 1st to 56.9° on the 22nd and following days.

According to Mr. Robert O'Brien Furlong, C.B., at Cloneevin, Killiney, Co. Dublin, 2.19 inches of rain fell on 17 days. The maximal fall in 24 hours was .50 inch on the 29th. The average rainfall in August of the twenty-two years, 1885–1906, was 3.239 inches on 17.0 days. Since January 1, 1907, 15.80 inches of rain fell at this station on 131 days.

Dr. Christopher Joynt, F.R.C.P.I., returns the rainfall at 21 Leeson Park at 2.355 inches, of which .520 inch fell on the 29th, and .340 inch on the 28th. The rainy days were 21. In July, 1.875 inches of rain fell at this station on 17 days, the largest daily fall being .470 inch on the 3rd. On the 2nd, also, .348 inch was recorded.

Dr. Arthur S. Goff reports that at Lynton, Dundrum, County Dublin, the rainfall was 2.51 inches on 19 days. The maximal falls in 24 hours were .48 inch on the 28th, and again on the 29th. The corresponding figures for 1901 were 3.11 inches on 16 days, for 1902, 2.73 inches on 18 days, for 1903, 2.78 inches on 25 days, for 1904, .98 inch on 20 days, for 1905, 9.35 inches on 21 days, and for 1906, 1.48 inches on 15 days. The mean shade temperature was 59.8°, the range being from 73° on the 13th to 44° on the 30th. In August, 1901, the M. T. was 60.5°, in 1902, it was 58.7°, in 1903, 58.6°, in 1904, 60.5°, in 1905, 59.1°, and in 1906, 63.6°.

At White Cross, Stillorgan, Miss Muriel E. O'Sullivan measured 2.641 inches of rain on 19 days, the largest amount which fell in 24 hours being .540 inch on the 29th.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was 2.326 inches on 20 days; the heaviest fall in 24 hours was .417 inch on the 2nd. In August, 1906, 2.369 inches fell on 17 days, the greatest fall in 24 hours being .552 inch on the 23rd. The mean shade temperature was 58.1°, the extremes being—highest, 72.0° on the 8th; lowest, 38.0° on the 31st.

According to Mr. R. Cathcart Dobbs, J.P., at Knockdolian, Greystones, Co. Wicklow, the rainfall for August was 1.950 inches on 17 days, compared with 1.765 inches on 13 days in 1906, 8.915 inches on 22 days in 1905, 2.875 inches on 20 days in 1904, 2.870 inches on 27 days in 1903, 3.520 inches on 16 days in 1902, and 3.625 inches on 15 days in 1901. The heaviest fall in 24 hours was .370 inch on the 28th. The total fall since January 1 amounts to 18.565 inches on 122 days, compared with 15.455 inches on 99 days in 1906, 21.058 inches on 110 days in 1905, 18.577 inches on 129 days in 1904, 23.100 inches on 134 days in 1903, 23.161 inches on 111 days in 1902, and 19.685 inches on 100 days in 1901.

At Clonsilla, Greystones, Co. Wicklow, Dr. Arthur G. Price recorded a rainfall of 1.89 inches, distributed over 16 days. The greatest measurement in 24 hours was .38 inch on the 28th. The mean temperature was 55.5°, the highest being 80° on the 13th; the lowest 39° on the 31st.

At the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, Dr. Francis P. Leyland measured 2.563 inches of rain on 18 days, the maximum in 24 hours being .596 inch on the 29th. Up to August 31, the rainfall of 1907 at this station amounts to 19.493 inches on 137 days. The mean temperature for August was 57.4°, the extremes being—highest, 75.2° on the 13th; lowest, 42.8° on the 30th.

According to Mr. W. Miller, the rainfall in Cork City was 2.98 inches, or 0.52 inch less than the average, and the rainy days were 19. The greatest fall was .73 inch on the 2nd. On the 11th .65 inch fell during a violent thunderstorm from 9 to 10 p.m. The mean temperature of the month was 57.2°, or 2.5° below the average. The thermometer rose to 67.5° on the 20th and fell to 43.0° on the 22nd. The rainfall for 1907 up to August 31 was 19·34 inches, compared with an average of 24.11 inches.

The Rev. Arthur Wilson, M.A., returns the rainfall at the Rectory, Dunmanway, Co. Cork, at 6.08 inches on 20 days. The largest measurements in 24 hours were 1.30 inches on the 2nd, and .98 inch on the 3rd and again on the 11th. A great thunderstorm occurred on the night of the 11th, with vivid lightning for 2 hours. Between 7 30 p.m. and 10 30 p.m. .76 inch of rain fell.

At the Ordnance Survey Office, Phœnix Park, Dublin, rain fell on 23 days to the amount of 2.867 inches, the largest measurement in 24 hours being .550 inch on the 29th. The total duration of bright sunshine was 160.7 hours, the longest daily spell being 10.8 hours on the 10th.

PERISCOPE.

L. AND N. W. RAILWAY COMPANY'S NEW INVALID SALOONS.

THE L. & N. W. RAILWAY COMPANY have recently put into service a new type of saloon for the conveyance of invalids. The invalid compartment is nearly in the centre of the saloon, and is over 18 feet long. It is fitted with an ornamental gold-lacquered brass bedstead, with a box mattress and a hair mattress on top, &c. At the foot of the bedstead are two easy chairs, trimmed with green Blenheim moquette to match the couch opposite the bed. The couch is of good dimensions, to enable an invalid to recline on it when so desired. On either side of the saloon, at one end of the invalid compartment, double folding doors are provided, wide enough to lift a bath chair through without disturbing the occupant. The chair can be taken with ease up to the side of the bed, and couch, and an invalid transferred into either. At the head of the bed curtains are hung from a brass curtain rod to screen the bed from any draught from that end of the compartment. These curtains are in green tapestry, and can be fastened together at the centre or drawn to the side. At the opposite end of the compartment a silvered lavatory wash-basin, with all requisites, is provided. This is in cabinet form, and is supplied with water from an overhead tank in the adjacent lavatory. The floor is covered with a thick Wilton pile carpet, to harmonise with the rest of the upholstery. This is laid on thick grey felt, which also serves to deaden the sound and vibration, thus making the compartment very quiet and still whilst running. Next to this compartment are two lavatories (with hot and cold water supply), with a passage between leading into a first-class compartment. The saloons are electrically lighted on Stone's system by lights on the roof. The lights have opal and tinted glass shades, and are controlled by switches in the compartments. In the invalid compartment a special dimming switch is fitted. The ventilation is on the torpedo principle, with torpedoes in the centre of the roof, and side ventilation over the doors, &c. The saloons are heated on the Consolidated Steam Heating System, the heaters being placed under the chairs, couches, &c., and controlled by valves which can be operated by the passengers. They are also fitted with the combined automatic vacuum and Westinghouse brakes, and passenger communication between driver and guard.

ARMY MEDICAL SERVICE.

THE Director-General of the Army Medical Service has forwarded, for publication, the following list of successful candidates for Commissions in the Royal Army Medical Corps at the examination held in July in London, and for which 59 candidates entered :—

MARKS	
605	Phillips, T. M'C., Queen's College, Belfast, B.A., M.B., B.Ch. (R.U.I.).
591	Dickson, H. S., St. Bartholomew's Hospital, B.A. (Cantab), M.R.C.S. (Eng.), L.R.C.P. (Lond.).
586	Dawson, G. F., Aberdeen University, M.A., M.B., B.Ch. (Univ. Aberdeen).
573	Byatt, H. V. B., London Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).
561	Todd, R. E., St. Thomas' Hospital, M.B., B.S. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.).
546	Lumb, T. F., Middlesex Hospital, M.R.C.S. (Eng.) L.R.C.P. (Lond.).
544	Gibson, H., London Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).
518	O'Brien Butler, C. P., Royal College of Surgeons, Ireland, L.R.C.P. & S.I.
514	Petit, G., Catholic University, Dublin, L.R.C.P. & S.I.
512	Hanafin, J. B., Catholic University, Dublin, L.R.C.P. & S.I

510 Renshaw, J. A., St. Bartholomew's Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

496 Dickinson, R. F. O'T., Catholic University, Dublin, L.R.C.P. & S.I.

494 O'Farrell, W. R., Catholic University, Dublin, L.R.C.P. & S.I.

493 King, R. De V., St. Mary's Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

490 M'Grigor, D. B., Aberdeen University, M.B., B.Ch. (Univ. Aberdeen).

489 Conyngham, C. T., Dublin University, B.A., M.B., B.Ch., B.A.O. (Univ. Dub.).

487 Hanschell, H. M'C., St. Bartholomew's Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

486 Lloyd, J. R., St. Bartholomew's Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

482 Carson, H. W., Queen's College, Belfast, M.B., B.Ch., B.A.O. (R.U.I.).

481 Gregg, R. G. S., Dublin University, B.A., M.B., B.Ch., B.A.O. (Univ. Dub.).

474 Treves, H. T., St. Thomas' Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

471 Dowling, F. T., Catholic University, Dublin, M.B., B.Ch., B.A.O., B.A. (R.U.I.).

462 Hingston, J. C. L., Middlesex Hospital, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

457 Stuart, F. J., Aberdeen University, M.B., B.Ch. (Univ. Aberdeen).

455 Odlum, B. A., Royal College of Surgeons, Ireland, L.R.C.P. & S.I.

448 Spong, W. R., Dublin University, B.A., M.B., B.Ch., B.A.O. (Univ. Dub.).

447 Grant, J. F., Aberdeen University, M.B., B.Ch. (Univ. Aberdeen).

441 Hart, P. H., Dublin University, B.A., M.B., B.Ch., B.A.O. (Univ. Dub.).

440 Jones, A. E. B., Dublin University, M.D., M.B., B.Ch. (Univ. Dub.).

430 Hendry, A., Aberdeen University, M.B., B.Ch. (Univ. Aberdeen).

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PART I.

ORIGINAL COMMUNICATIONS.

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ART. XIII.—*Choice of a Medical Career: Medical Ethics and Etiquette.*[a]

By JAMES CRAIG, M.D., Univ. Dubl.; Fellow and Registrar, Royal College of Physicians of Ireland; Physician to the Meath Hospital and County Dublin Infirmary.

OLD customs die hard in the Meath Hospital. The physicians and surgeons of bygone days were wont to begin the work of the session with the delivery of an Inaugural Lecture, and because it has been the custom in the past I find myself, on the present occasion, somewhat unwillingly striving to carry on this ancient practice. It is true that the primary object of the Address seems to have been to offer words of welcome and encouragement to the students who had decided to join the ranks of the profession of medicine. If my task to-day were to end with extending a hearty welcome to the ladies and gentlemen who are brave enough to face the dreary round of examinations and the constant dangers to their lives involved in the preparation for our arduous profession,

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[a] An Introductory Address delivered to the Students of the Meath Hospital and Co. Dublin Infirmary on October 9th, 1907.

I should willingly undertake it. But something more is expected from me, and it is that something which I feel reluctant to approach. Let me, however, at once accomplish the agreeable portion of my duty by offering, on behalf of my colleagues and myself, a most cordial welcome, not only to the students who are commencing their clinical studies this session, but also to those who have been with us in previous years. We wish success to each and all of you, and trust that when, eventually, you become the proud possessors of the qualifications which will entitle you to the name of "Doctor," you will go forth into the world with a kindly remembrance of the Meath Hospital, and return to it, as occasion permits, to tell your teachers of the good fortune which they venture to hope is awaiting you individually. I can say with confidence that you will not tell the news of your success in life with any greater delight than it will be received by the members of the staff who are here to welcome your visit. There is no stronger stimulus to a teacher's work than what is given him by the cheering words of his former pupils when they return to tell him that his efforts in showing them how to acquire a knowledge of the practice of medicine or surgery have not been wholly in vain. We all require encouragement, teachers and pupils alike, and although

> "Not once or twice in our fair island-story
> The path of duty was the way to glory,"

still most of us are weak enough to find cold comfort in performing what in many cases is clearly our duty, when a word of praise might have turned the difficult task into a work of pleasure.

I cannot refrain from here alluding to the high ideals of work and conduct which animated the greater number of our students during the session which ended with the month of June. In both senior and junior classes there was an earnest seeking after knowledge, and a disposition to make use of all the special senses which gladdened the hearts of your teachers, and caused the time spent in the wards to pass with amazing rapidity. It does not require any special prophetic gift to enable one to forecast a distinguished career for many members of our class of last year.

It is not customary on these occasions to give a detailed account of the successes gained by our former pupils, but, as an encouragement to some of my hearers, I cannot omit a passing reference to the high position which Dr. John D. Sandes—a former gold medallist of the Hospital—obtained at the examination of candidates for the Indian Medical Service, held at the commencement of the present year. He secured third place at the entrance, and second place with a gold medal when leaving the Military Training School, so that we have every reason to be proud of his achievements. The trio who competed for our gold and silver medals in the month of May passed through the fiery ordeal with reputations previously established still further enhanced. These gentlemen—Messrs. Elvery, D. Adams, and Hewson—may be safely relied upon to bring additional prestige to the old Meath Hospital.

This brings me to the end of the pleasant portion of my duty, and I now approach, with some reluctance, the task of selecting a subject, or subjects, which will furnish a body and tail to my Address, for the simple reason that in many influential medical quarters the delivery of these Addresses is regarded as an obsolete and wholly unnecessary custom.

At the same time I am conscious that they may not be completely barren of results. In my Inaugural Address given fourteen years ago, among other reforms I urged the necessity for establishing post-graduate courses in Dublin. It took a number of years before the suggestion assumed a practical shape, but now, I am glad to say, the venture has been fully launched, and has already proved an unqualified success. Again, seven years ago, I selected as the subject or my address "Consumption in Ireland: its Prevalence and Prevention," and although I cannot flatter myself that many of my suggestions, made with a view to lessen the prevalence of this national scourge, have so far been adopted, yet something has, undoubtedly, been done on the lines of instructing the public as to the infectious nature of the disease.

It is difficult for me to let the present opportunity pass over without once again bringing into prominence the utter lack of duty which has characterised public bodies in failing to deal effectively with the subject of tuberculosis. But knowledge is spreading, and other powerful agents are at work in the matter. The Women's National Health Association of Ireland, with their President, Lady Aberdeen, have taken a praiseworthy step in organising a Tuberculosis Exhibition, which it is hoped may be the means of arousing public interest in the subject, and bringing home to the mass of the people some of the facts concerning its propagation, prevention, and treatment. I shall, therefore, resist the temptation which the subject of tuberculosis offers to me, and ask your indulgence while I submit for your consideration some points that occur to me in reference to questions that will arise almost as soon as you have received your qualifications to practice.

In the first place, allow me to offer a few observations on the difficult problem of the choice of a career in the medical profession. In some cases a young man's future seems to be clearly mapped out for him without any anxiety or doubt on his own part, but the frequency with which advice on the matter is sought from those who have gained experience in life proves that to many the question is by no means an easy one to decide.

Openings are plentiful enough from which the young medical man can make a selection, but I must frankly confess that the majority of them are not to be found in Ireland.

For the young man without means there is no opening with better and safer prospects than one of the public services—the Indian Medical, the Royal Army Medical, and the Royal Navy Medical Services. I mention them in the order of severity of competition. In each of them there is a fair salary secured at once to the successful competitors; there is promotion, accompanied by extra pay to be looked forward to; and finally, there is either a fixed gratuity for the officer who retires under twenty years service or a pension computed on a liberal basis for those who serve up to or beyond the twenty years.

There are few men in private practice who at the end of twenty years' work could boast that they had invested out of their earnings in that time a sum sufficient to secure them £1 a day for the remainder of their lives. Yet this is what the Services offer.

There are some medical appointments in the gift of the Colonial Office for service in the Colonies; but as many of them necessitate the practitioner living in such places as in the West Indies and on the East and West Coasts of Africa, there are obvious objections to these from a health point of view.

The Prison Medical Service, the County Lunatic Asylums in England and Ireland, and the County Medical Officerships of Health in England, all afford a chance of securing a decent income.

Employment as a surgeon on one of the many lines of ocean steamers is a pleasant means of making an acquaintance with foreign countries and of laying up a reserve of hæmoglobin for harder days to come; but it should not be regarded in any sense as a career, for it leads to nothing, and affords only a very meagre experience.

Well-conducted Irishmen have always been able to make a good living in England. In order, however, to secure a remunerative connection it is almost necessary that anyone going to practice there should have sufficient capital either to purchase a share in an existing practice or to buy the interest of a practitioner entirely out. But it is astonishing how many of our students have risen to positions of affluence in English practices which they have worked up without any capital, but by brains, industry, and Celtic affability.

I have now reached the length of expressing an opinion as to the future of a practitioner whose ambition is to remain in this country. I need say nothing of the few who are fortunate enough to secure professorial chairs or permanent hospital appointments in the teaching centres throughout the country, as in the majority of cases these individuals are at least able to live, and a few of them are even fortunate enough to be sufficiently wealthy to enjoy the luxury of a motor car. What prospects, however, lie before the majority who have a wish to remain in their own country? In the chief towns it is here and there possible for a good class practitioner to make a living wage by private practice alone; but in most cases, even in the larger towns, it will be found that the men who are able to live in even comparative comfort are those who have the emoluments attached to a poor law appointment to supplement the amount that is to be gained from private practice. There is small chance, therefore, for a practitioner to make a comfortable livelihood in Ireland outside of the teaching centres unless he is able to secure a poor law appointment either as visiting surgeon to a union infirmary or as medical officer of a dispensary district.

I cannot in all honesty recommend these positions to those of you who may have such a career in view, for apart from the evils associated with the efforts to secure these positions, and to which I will allude later on, the service suffers from the disabilities attached to meagre pay, uncertain holidays, and doubtful pensions.

Abler pens than mine have been used with perennial fertility to expose the disabilities under which the officers of the Poor Law Medical Service suffer.

It is not my purpose here to denounce this Service with the virulence which my pen could command, for with all its shortcomings it is possible for a man to lead a happy life in ministering to the sufferings of the poor, although he may find it hard at times to pay his weekly bills. Up to the present, in the matters of salary, holidays, and superannuation, the Service has not been one that offered a bright prospect for an ambitious youth. But of recent years some improvements have been taking place, mainly owing to a combined agitation on the part of the majority of the medical profession, and indeed everything points to a further continuance of the policy which has led to a recognition by some of the boards of guardians of the justice of the claims of their medical officers.

It is to be feared, however, that the increases in salaries that have already been adopted have been, for the most part, in the districts where the pinch of poverty was least felt among the medical officers; and this inequality is a crying shame, but the medical profession are awaiting some definite action on the part of the Local Government Board authorities to compel the unions which up to the present have either rejected or failed to consider proposals to improve the position of their medical officers to do their duty in the matter.

I regret to say that not the least formidable obstacle to poor law medical reform has arisen from the selfish and unsportsmanlike conduct of members of the medical profession themselves. It has been mostly among the younger men that this disloyalty has occurred. Let me cite an example: A medical vacancy occurred in a union in the North of Ireland. The salary offered was quite inadequate, and the neighbouring medical men, in loyalty to a decision of the Irish Medical Association, unanimously agreed to abstain from competing for the appointment. The guardians would have been compelled ultimately to offer an increased salary, which would have been in some measure commensurate with the amount of work required from the medical officer; but this was not to be, for a young gentleman from the South of Ireland, equipped with the degrees of the University of Dublin, and who, in other circumstances, would have stood no chance whatsoever of being chosen, offered himself for election, and in spite of remonstrances urged from many sources persisted in his candidature, and was in the end elected.

I am not in a position to state whether this gentleman is yet tired of doing work at a remuneration which the Irish Medical Association and men of experience and knowledge of the locality had decided to be entirely insufficient; but at all events I know of no excuse that could justify the lack of *esprit de corps* shown by him. We may, however, assume that inexperience and ignorance were accountable for this act of selfish folly which the medical profession was bound to condemn. But it is just such acts of folly that help to retard the long-needed reforms in the Poor Law Medical Service.

Apart altogether from the questions of salary, holidays and superannuation, one of the gravest objections to this Service is the methods which have to be adopted by candidates in order to secure an appointment by the votes of the members of the Boards of Guardians It is very rarely indeed that the question of merit arises. Influence, religion, politics—anything, in short, rather than professional attainment—may secure the support of the electorate. Far be it from me to suggest that men of the highest distinction are not to be found in the Poor Law Medical Service, for such a suggestion would be entirely at variance with facts; but that does not in the least minimise the highly objectionable methods that obtain in the securing of these appointments. I have to admit that objections have been urged against the establishment of a State or National Medical Service as suggested in the recent Report of the Viceregal Commission, but any reasons that could be adduced against such a Service are small in comparison with the evils that at present exist, and have made the Service notorious.

For my own part I have no hesitation in saying that the entrance to the Service should be gained by competitive examination. I say this in spite of the fact that examinations may not be in all cases the highest test of a candidate's ability or fitness for a post, still the adoption of such a principle would give merit the place it deserves in the qualifications necessary for such important positions, and it would at once put an end to the humiliating experiences which candidates at present undergo in canvassing for these appointments. But far beyond every other consideration, it would make for a more efficient service in the interests of the poor people who are to be treated by the medical officers, particularly so if, as should be the case, the scale of salaries was fixed on a more liberal basis, so that the best class of men turned out from the various medical schools in the country might be encouraged to compete for the appointments.

I believe the statement to be incontrovertible that the establishment of a National Medical Service, which would be entered by competitive examination, and in which the medical officers would receive an adequate wage for their services, would make for higher efficiency in the treatment of the poor.

Let us stop for a moment to consider the manner in which the suggestion of the Viceregal Commission for a National Medical Service was received by the medical profession. At what was probably the largest meeting of medical men ever gathered together in Ireland for the consideration of a specific point, it was decided last autumn by the members of the Irish Medical Association that such a service was highly desirable, the majority in favour of the proposal being at least ten to one.

After a prolonged discussion in the State Medicine Section of the Royal Academy of Medicine in Ireland, the proposal to establish a National Medical Service was, I believe, unanimously adopted.

Further, the Council of the great British Medical Association also approved the scheme on the recommendation of some of its Irish branches.

These expressions of approval of the suggested Service, emanating as they did from all sections of the medical profession in Ireland, cannot well be ignored.

The strongest argument that can be adduced against its adoption is that the local bodies, which at present are responsible for raising the money to pay a portion of the salaries of the Poor Law Medical Officers, would be deprived of the patronage which they now possess in electing the candidates for whom they have a predilection. In other words, it seems only fair that the man who pays the piper should be allowed to call the tune.

I frankly acknowledge that this is an objection, and I also admit that to increase the burden on the ratepayers so as to secure more adequate salaries for the members of the service would in many Unions be quite impossible. But even these difficulties are not insuperable, and many solutions to them have been already offered. I am unwilling, at this stage, to prejudice in any way the possible inception of the scheme by putting forward my personal views as to the methods by which it might be made generally acceptable, for I hold a very strong opinion that, acting on the precedent of the Land Conference, the best way to secure a solution of this problem of a National Medical Service would be to get together a round table conference, at which the various interests involved would be represented by capable conciliatory men, who would produce a scheme acceptable to the Government and to the interested parties.

In leaving this portion of my Address I venture to express a confident hope that to this as well as to many other of the most excellent suggestions put forward by the Viceregal Commission effect may be given at no distant date. At any rate a Medical Service in connection with the treatment of the poor, if instituted on the lines broadly laid down by the Commission, would command the support of the great majority of the medical profession in Ireland, and would probably put an end to many of the grievances under which the Poor Law Medical Officers have suffered for many years, and I have no doubt whatsoever but that it would tend to place at the service of the poor, as well as of the paying class in this country, many men of high ability who under present conditions are driven to seek their fortunes in other lands.

I propose to devote the remaining portion of my Address to a few discursive remarks on the important and thorny subject of Medical Ethics and Etiquette. This is a side of medical education which receives too little attention either from the professors in the medical schools or from the teachers in the hospitals, with the result that young men are allowed to go forth into practice without any knowledge of the pitfalls that await them in their dealings with the other members of the profession and the public.

It has been said that we require no other principle to guide us in our professional conduct than to follow the apostolic teaching of doing unto others as we would that others should do unto us.

I have no reason to dispute this advice, which is altogether excellent, but like many of the minor commandments it is much too general in its application to meet many of the questionable points of professional conduct that arise in the everyday practice of our profession. Medical Ethics are the rules or principles that should govern our professional conduct. Medical Etiquette is the ceremonial to be observed in our relations with one another and with the public. The public have a mistaken notion that medical etiquette consists of some rules, unintelligible to them, which the medical profession has imposed on its members in order to safeguard their own selfish interests, but which are detrimental alike to the welfare and the pockets of the general public. This is by no means the case, as these rules have been formulated quite as much in the interest of the patient as for the benefit of the members of the medical profession.

If these rules at times appear to be faulty it is generally due to a false interpretation of them.

Permit me, however, first of all, to point out to you a few of the matters that are regarded as unethical in professional conduct, and then I shall say something later on concerning etiquette.

You will scarcely have been given time to add to your probably meagre wardrobe the silk hat and frock coat which, with a diploma, go to the making of a professional man, until you will be besieged with requests from the manufacturers of patent medicines and patent foods to give laudatory testimonials of their products for subsequent publication. All such appeals must be persistently ignored if you desire to run on ethical lines.

As time goes on you will be filled with a burning desire to see your names in the daily papers as the authors of marvellous cures or the performers of some wonderful operations. Whatever valuable discoveries you make are to be used for the advancement of knowledge in your profession, and may only be communicated to the medical societies or medical journals, where your results can be examined and intelligently criticised.

You must be no participator in any public laudation of your own professional achievements.

The respect of your professional brethren is a subtle sentiment, won only by slow degrees, but extremely easily lost, and once damaged seldom if ever regained. To win this respect it is necessary for you to play an honourable part in the game of life, and one of the points upon which the opinion of the profession is most sensitive, and most readily turned in a practitioner's disfavour, is the semblance on his part of any coquetting with the bewitching siren of advertisement.

You must endeavour not to obtain practice by any unworthy means—no success, no notoriety is worth the loss of the respect of your brethren in the profession.

Another pitfall which the unwary practitioner must diligently avoid is the giving of professional assistance to unqualified persons—particularly unqualified dentists. It is not permissible for a practitioner to give his professional services to any society or combination of individuals, unless the entire sum of money paid by the members for the purpose of securing medical attendance for themselves and their families finds its way into the coffers of the practitioner.

I have already alluded to the depravity of underselling, particularly where a principle is involved, and the instance I have related should require no further elaboration.

It is not desirable for a practitioner to erect a notice board outside his residence on which is set forth the small value which he places upon his medical skill. It may be that he estimates his services at a shilling or even at half a crown a visit, but it is unbecoming to tell as much to the passer by.

A leaning towards any form of quackery is certain to place the practitioner immediately without the pale of decent medical society, and where it is openly practised leads at once to ostracism and removal of the practitioner's name from the Register of the General Medical Council.

Although I have not by any means exhausted the ethical rules which help to regulate professional conduct, I must now pass on to the subject of medical etiquette. First of all it may, perhaps, clear the air of any misapprehension if I state quite clearly that no individual member of the public is to be regarded as the absolute property of any medical man. The public must be permitted to have a free choice in the selection of a medical attendant, but whether they are wise to be chopping and changing their attendant is quite another matter. During the progress of any specific illness if a patient sees fit to change his medical adviser the medical profession expect that an intimation will be given by the patient to the practitioner in attendance that his services are no longer required. This is to prevent possible misunderstandings from arising between the medical men, and to insure that the patient will not be subjected to the advice and treatment of different medical advisers at one and the same time.

In a case of emergency where a practitioner is called upon to see a patient in the absence of the regular medical attendant, the former should communicate the fact to the latter at the earliest possible moment, and he should not remain in attendance after the regular attendant is available; further, where for any reason a practitioner has been placed in charge of patients by a brother practitioner, he must exercise the most unceasing care neither to undermine the faith of the patients in their own absent attendant, nor afterwards himself undertake the treatment of such patients.

In the matter of consultations it is a practitioner's duty to accept with alacrity the earliest hint from a patient that a second opinion on his case would be gratifying either to himself or to his friends; but there are certain conditions in which it is imperative upon him to urge the necessity for further advice and assistance without waiting for a request from the patient or his friends. The ethical committee of the British Medical Association have formulated these cases as follows:—

(*a*) When a question arises of the propriety of performing an operation or adopting some course of treatment which may be dangerous to life or permanently injure the condition of the patient, especially if the condition which it is sought to relieve by this treatment be not itself dangerous to life.

(*b*) When a question arises of destruction of a fœtus or unborn child in the interest of the mother.

(*c*) When the practitioner in attendance is definitely in doubt either as to the diagnosis or as to the treatment to be followed, and when delay in arriving at a decision might be fraught with serious consequences to the patient.

(*d*) When there is evidence of serious doubt in the mind of the patient or his friends as to the correctness of a diagnosis or of the treatment pursued.

(*e*) When the attendant has reason to suspect:
  (i.) Performance of any illegal operation.
  (ii.) Administration of poison.
  (iii.) Commission of any other criminal offence.

In regard to the choice of a consultant it is generally expedient to follow the wish of the patient or his relatives; but if the case is one which demands special knowledge it is the practitioner's duty to endeavour to secure the services of the consultant from whom he expects to derive the greatest assistance.

The practitioner in attendance arranges for the consultation, and punctuality on the part of both advisers is so necessary that it is not incumbent on either to wait beyond a reasonable time. Failing punctuality, the consultant may see the patient in the absence of the other.

The regular attendant enters the patient's room first, and leaves it last, and the opinion arrived at after consultation should be communicated to the patient in the presence of the regular attendant.

If a difference of opinion exists between the two medical practitioners it is most desirable that it should be communicated to the patient or his friends, so that further advice may be obtained in the interest of the patient.

The regular attendant should inform the patient or his friends as to the amount of fee to be paid to the consultant.

Where a personal consultation is impossible the medical attendant should write a letter of information and introduction to the consultant, who in turn communicates his opinion and suggestions as to treatment to the medical attendant.

There are two most essential rules which it is the duty of the onsultant to observe in the strictest manner. In the first place, he should exercise the most scrupulous care to avoid disturbing the confidence of the patient in his ordinary medical attendant; and in the second place, he should not supersede the practitioner through whom he has received an introduction to the patient.

This latter rule seems to be somewhat at variance with the general principle which was previously laid down—that the public must not be regarded as the private property of any individual practitioner; but, again, this rule has been formulated for the advantage of the public, so as to lessen any possible contingencies that would tend to detract from the freedom of consultations.

In conclusion, let me say that there is one point upon which it is almost impossible to give advice, and that is—how far a knowledge of a patient's actual condition should be communicated to himself by his medical attendant.

In many instances it is right to take a patient entirely into your confidence. In some cases, however, it would be most injurious for his future well-being that his actual physical condition should be explained to him; but this much I can say, that where a practitioner has no doubt in his own mind as to the serious nature of an illness he should be perfectly candid with the friends of the patient, and thereby obviate any reflections that might possibly be cast upon him at a later period.

ART. XIV.—*Sleep.*[a] By RALPH S. OLDHAM, M.D. (Univ. Dub.), Blackpool.

(*Continued from page 253.*)

THE theories of the causation of sleep that have for their foundation these histological and vascular conditions are many and various, but none of them can be called satisfactory. They may be considered under the heads of—(1) Chemical; (2) Circulatory; and (3) Histological.

Chemical.—Preyer, basing his statements on the conditions known to be present in muscular fatigue, believed sleep to be due to an accumulation in the nerve-centres of sarco-lactic acid. But the very fact that the depth of sleep progressively increases for an hour or more after its onset prevents a complete explanation on these lines. Also, if sleep were due to the accumulation of waste products in the nervous elements or the blood it would be necessary to have a greater (and not a less) supply of blood to the brain wherewith to wash away the excess during the rest of sleep, and, if such a condition were absent, it is to be feared that we would have but little hope of ever waking. And, indeed, experiment quite fails to support this theory, since injection of sarco-lactic acid into an animal does not produce sleep.

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[a] The basis of this Paper was awarded the Medal of the Dublin University Biological Association in 1905.

Pflüger observed that frogs deprived gradually of oxygen sank into a condition of profound sleep. Taking it for granted that the phenomena of life are dependent on dissociation changes in living matter, he argued from this experiment that these changes could only take place in the presence of free oxygen; that the substances derived from the dissociation then became united to the free oxygen to form CO_2 and other waste products, and that in this way, provided the dissociation was sufficient, when all the oxygen became used up, the living matter suffered from deficiency of oxygen and excess of CO_2. Thus the activity of the cerebral substance connected with psychical states depended on cerebral respiration, and sleep was a condition of cerebral asphyxia.

Foster is also inclined to adopt this theory, and holds that sleep is due more especially to the exhaustion of the "intra-molecular oxygen," which, as sleep goes on, is gradually restored to the tissues through the activity of the respiratory centre until there is sufficient free oxygen present to cause wakening. But, as he points out, some inhibitory mechanism would be necessary to prevent the respiratory centre from being abnormally aroused by this exhaustion of oxygen (as it is in ordinary asphyxia), and the very necessity for presupposing the existence of such a mechanism is of itself a strong argument against the theory.

Circulatory.—As to the part played by the associated vascular conditions of the brain it has been suggested that sleep is brought about by two consecutive processes—firstly, fatigue of the vasomotor centre, which causes it to relax its grip upon the peripheral blood-vessels; and secondly, the anæmia thus produced acts on the cortical cells in such a manner as to cause a cessation of their external activity. This is a fallacious and unnecessarily complicated argument. All our experiences of physiological activity point to the fact that the bulbar centres are less delicately organised and more resistant than the higher cerebral centres. Why then should they be the first to show signs of becoming susceptible to fatigue? And, if it be granted for the sake of argument that fatigue does directly lessen the vasomotor activity, why should not the same statement be applicable with equal force to higher centres? On the other hand, if the cortical cells go to sleep because their blood supply is diminished, surely this is a sufficient reason to account for the diminished activity of the vasomotor centre. Moreover, even a great diminution in the supply of blood to the brain is not necessarily followed by sleep. Both carotid and both vertebral arteries may be tied in dogs at the same time without producing any symptoms, and the same is true in monkeys after ligation of one carotid and one vertebral. Therefore, it is clear that, though sleep is normally associated with cerebral anæmia, it is not directly caused by it. The two phenomena are concomitant, but not connected. Indeed, the recumbent posture, the bodily rest and warmth which accompany sleep, are quite sufficient to account for the fall of arterial pressure (Hill).

Histological.—Three different suggestions have been advanced on purely histological grounds to account for the causation of sleep:—(1) The shrinkage of the nerve cells during fatigue has been supposed to cause a breakage in the physiological continuity necessary for the carriage of nerve impulses; (2) the idea has been put forward that the dendrites are contractile, and by pulling themselves in break the nervous chain; and (3) it has been imagined that the fibrils of neuroglia insinuate themselves between the various neurons and block the nerve impulse by acting as insulating material. These hypotheses are fascinating because of their apparent simplicity, but they are purely fanciful and unsupported by any real evidence.

An analogy has often been drawn between the sleeping and waking brain and the action of the heart; and sleep has even been defined as the diastolic phase of cerebral activity. The sleeping brain may be compared to a quiescent but still living ventricle. Neither show any active vital phenomena, yet both are possessed of irritability, and an appropriate stimulus will excite a response—in the one case a contraction, in the other a state of mental activity. Now, though this is only an analogy, yet it seems to lend itself to elaboration into a theory, which ought to prove far more satisfactory than those usually advocated, and which will now be discussed in detail.

In the first place, then, in order to favour the onset of sleep, it is necessary to remove all sources of irritation or excitability, as far as lies in our power. It is for this reason that we choose the time of night, so as to avoid all unnecessary sights or sounds. We remove the garb of civilisation and put on loose, comfortable clothing so as to free our body from all restraint; we empty the bladder to prevent any reflex irritation from that viscus, and we endeavour to abstract our mind from all thoughts of worry or perplexity. To put it shortly, we aim at the abolition of all reflexes, mental, visceral, or external.

But that sleep is not simply the result of the absence of afferent influences is proved by the contracted condition of the pupils, before referred to as a clear indication of some sort of cerebral activity. Indeed, it would be easy from common experience to controvert such a statement. For, if sleep were solely attributable to the absence of stimuli, their continued presence would not only retard but altogether obviate its onset. There must be few, indeed, who have not at one time or another been compelled to snatch a few moments slumber at a time when external conditions were altogether adverse. A cessation of afferent impressions is certainly desirable, but by no means indispensable since the same end result can be brought about by a different method. It is Nature's object to endeavour to persuade the cell-body to take a rest by temporarily removing its source of employment. The same object will be attained, should such conditions be impossible, by the fatigue naturally resulting from over-work, but with this difference—that in the one case the cell-body is put in a condition preparatory to reintegration by a voluntary persuasion, while in the other rest becomes a matter of stern necessity, and so obligatory that the neurons have perforce to disregard the stimuli they continue to be subjected to, and this they can the more readily do since the effect of the fatigue is to lower the liminal value of the stimulus. It is curious how soon the brain will accustom itself to disregard all external sounds, always provided there is some degree of evenness and monotony in their loudness and pitch; and still more curious to notice how the sleeper will often start into wakefulness the moment there is any cessation or alteration in these sounds. But there is no contradiction in this, if it be allowed, as I think it will, that stimuli may be of a *negative* quality, if I may so express it. For a stimulus in its widest acceptation is nothing more nor less than some *sudden* alteration in the surrounding media of the body, and such an alteration can just as readily take place by the sudden withdrawal of some accustomed sound as by the sudden accession of some new factor. The brain, so to speak, is at once struck by the absence of that which it had conceived to be a normal association of its waking state, and is aroused to activity by the alteration. What a highly important part the absence of afferent influence plays in the inducement of sleep is shown by the much quoted, but well authenticated, case of Strümpell's boy. This lad was the victim of a complicated anæsthesia which deprived him of all communication with the external world except by means of one eye and one ear, and by closing the eye and stopping the ear he could be put almost immediately into a deep sleep.

The removal of afferent stimuli must then be considered as the natural method of procuring surroundings favourable to repose, and one that is always adopted when circumstances will permit, for it is a process that is based on sound physiological principles. It is well known that when an axon is cut off from its cell body characteristic changes are produced in the latter, which are scarcely less rapid, though usually not so far-reaching as the Wallerian degeneration in the distal portion of the nerve fibre. Now, Warrington has found similar changes to occur in the motor cells of the anterior horn after section of the posterior spinal roots. Since in this case no anatomical injury has been inflicted on the motor neurons we can only surmise that the cause of the alterations is the loss of impulses which normally reach them from the sentient surface of the body. In short, we may say, with Marinesco, that the functional integrity of the neuron depends on the integrity of all its constituent parts, and of the neurons which carry to it functional excitations—*i.e.*, excitations connected with its proper physiological work. The neuron in fact lives by its function, or, in common language, by doing its work. Should the supply of work be lessened, as by the removal of afferent impulses, the nutrition of the neurons of the various central mechanisms suffers ; they lose their tonus and are reduced to a condition far less favourable to a state of continued activity than to one which will permit of rest and repair.

Whence, then, do they derive their power of reintegration ? Hering, in his theory of colour vision, assumes the existence in the visual apparatus of substances of three different kinds called the black-white, the green-red, and the blue-yellow. Like all other constituents of the body, these substances are broken down and built up again—in other words, undergo destructive and constructive metabolism. Further, and this is the important point, when any of the visual substances are consumed at one part of the retina they are supposed to be more rapidly built up in the surrounding parts, and in this way many of the phenomena of contrast receive an easy and natural explanation. Now, if we consider this theory broadly, and without any special reference to vision, what is found to be its meaning ? It implies that the mere act of building up or of breaking down affects protoplasm in other ways than that expressed by the bald statement that anabolism provides energy and katabolism lets that energy forth. There is, in fact, a self-regulating adjustment of the cell whereby the mere condition of the protoplasm produces effects which result in a particular state. The normal periodic life of the cell appears to swing, with pendulum-like regularity, backwards and forwards between the two points in its chemical life that are most opposed and antagonistic to each other; and the force that regulates it is inherent in the cell itself and dependent on the power it has of neutralising its own effect. Thus, action tends to reaction; every act of anabolism necessitates a subsequent process of katabolism. In the course of the working day a great number of stimuli exert their activity upon the receptive channels of the body, and it is this continued incitement to katabolism that of itself has the intrinsic property of calling for and bringing about the intervention of an opposite phase. Though recuperation does, of course, go on largely during the day, yet the process lags behind that of disintegration; hence there is a cumulative effect which progressively increases from the opening to the closing hours. The longer the swing takes place in the direction of katabolism the more powerful are the forces exerted to pull it in the opposite direction, till finally a rebound occurs, and, as the assimilative processes in the cell come to exceed the dissimilative, the external signs of energy (which are always and only associated with the katabolic phase of activity) cease or diminish. Sleep may, therefore, be said to be due to the abeyance of external function during a periodic internal assimilatory phase brought about by the self-regulating adjustment of the cell.

Let us now consider some of the variations of sleep on the basis of this theory of self-adjustment.

Dreams are generally described as being excited by central and peripheral stimuli. I would prefer to consider them as being entirely due to the latter. I do not believe in the "automatic excitation" of the cerebrum, as it is called; even the supposed proofs of spinal automatism have in more cases than one vanished with the advance of knowledge, and it has been shown that actions which were once deemed automatic depend on afferent impulses hitherto unnoticed. These peripheral stimuli have, I am inclined to believe, two modes of action—viz., (*a*) direct or unconscious, and (*b*) indirect or subconscious. The *direct* form of stimulus is probably the starting point of all dreams; it produces no conscious impression on the sleeper since he lies in that deep sleep, where consciousness is absent. It acts solely by providing a sudden restoration of nerve tonus which tends to produce a break in the phase of reintegration. It will, therefore, act most easily on those cells that have been the last to cease their katabolic activity, and this explains why dreams so often appear to arise as an after-effect of some recent perceptions, or to be determined by some predominant thought or train of ideas. The stimulus need be of the slightest variety; sensations arising from the varying temperature and pressure on the bodily surface, from restraints to the easy action of the muscles of respiration, from the movements of the limbs and awkward positions, and from organic stimuli affecting the bodily organs, are all sufficient to produce dreaming. The *indirect* stimuli are more powerful, though their occurrence is rarer, and comprise all such as arise from the action of external objects on the sense organs—*e.g.*, a voice, touch, or light. They do not actually excite consciousness (since that would be to awaken the sleeper), but the brain is yet vaguely aware of their arrival, for, in addition to affecting nerve tonus, they also make their action felt by alterations in the general blood-pressure. It is this determination of blood to the brain which is of itself sufficient to act as a still further stimulus. The brain would appear to be more excitable during dreaming than in the waking state, since the resistance offered to the passage of a nerve-impulse is necessarily lowered. Consequently, a mere alteration in the blood-pressure may suffice, under such circumstances, to arouse some long-forgotten impression, the stimulus being strong enough to permit of impulses traversing the different association fibres, and thus restoring an idea to consciousness in the sleeping brain when, perhaps, it could not do so in the waking state. These indirect stimuli, then, are only to be considered as adjuncts to the direct form with which they may either combine or interfere, and by which their action may even be nullified. In some dreams the sleeper becomes so absorbed in these mental images, once they are aroused, that he pays no attention to the advent of fresh external impressions, unless they are powerful enough to wake him ; in others, on the contrary, he is in a condition in which the boundary between the unconscious reception of new impressions and the subconscious reproduction of old ones is so thin as to permit a blending of the two. A spoken word, or a familiar touch, will suffice to change the current of his thoughts.

Somnambulism is rarely seen, except in individuals of an irritable, volatile, or nervous disposition. In such cases, even in the perfectly waking state, any emotion of the mind produces some corresponding action of the body, though perhaps slight. That is to say, the afferent link in the neuron is in a perpetually hyper-tonic state, and responds readily to what would, in ordinary circumstances, be a subminimal stimulus. Hence in dreaming, where inhibitory power is in abeyance, it is but what we might expect to find the limbs dramatising with precision and accuracy the pictures presented to the mind. The somnabulist is, in fact, a purely reflex animal—using the term in its properly restricted sense, that actions are elicited by stimuli without affecting the consciousness—and all the phenomena he exhibits are only an illustration of that form of reflex action designated by Pflüger " purposive adaptation." (It is interesting to note that in a pithed frog a purposive act can be obtained *only* by stimulation of some sensory end-organ.)

Somnolency and *Hypnosia* I consider to be primarily due to some abnormal condition of the sensifacient surface of the body, whereby its power of replying vigorously to afferent stimuli is dulled or temporarily abolished. As has been said, a neuron lives by doing its work ; if the supply of work be diminished its source of income is also lessened. It begins to feel the pinch of poverty, and is reduced to a weakly condition, fatigued by the least effort and continually demanding repose. And yet this repose is the worst thing possible, since it is thus deprived of all chance of obtaining the work it so urgently needs. Matters go on in this way from bad to worse; by its enforced rest all prospect of remunerative labour is lost; it becomes one of the permanently unemployed with no means of support; until, finally, with one last vain effort, causing general convulsions, it dies from inanition.

Insomnia will naturally result from causes antithetical to those which induce sleep—viz., perpetual stimulation from without, or perverted metabolism from within—*i.e.*, disease. But these, after all, will only account for a small number of cases. The external stimuli may cause a sleepless night, but they can usually be suppressed or mitigated. Disease is a more or less self-limited process, in which sleeplessness is only one of the symptoms of the unhealthy condition of the body. Eradicate the cause of the disease and the dreamless sleep of health will return of itself. What I would more particularly refer to now is not the mere occasional wakefulness which can be attributed to some obvious cause, but a prolonged inability, for no assignable reason, to obtain sleep sufficient in quantity and quality to maintain health—a morbid manifestation in itself, to which the term insomnia ought properly to be confined. And the terrible havoc wrought by it upon the mind and body will be appreciated when it is realised how absolutely the process of anabolism is thereby interfered with. Continued loss of sleep is far more dangerous than starvation. Some startling experiments have been made on young dogs in this connection (Manaceïne). Some were subjected to starvation, and survived for over twenty days; others were deprived of all sleep, and death supervened in five days. The temperature towards the end fell to 8° C. below normal, the reflexes disappeared, and the tissues showed a widespread fatty degeneration. Patrick and Gilbert observed the effects of ninety hours' loss of sleep on three subjects. The excretion of nitrogen and of phosphates was considerably increased, the pulse-rate distinctly diminished, and the temperature fell slightly. Loss of power occurred early in the muscular and later on in the nervous system; but, curiously enough, an increase in acute vision was noticeable in all three cases.

These experiments will help us to realise how serious and troublesome a malady insomnia is. It is men of mature age, and chiefly those of the professional or business classes, who are the greatest sufferers; rarely is it seen among the poor. There is seldom absolute sleeplessness; the sufferer continually tosses and turns, or he may fall asleep at once, only to wake in the early hours of the morning, and spend the rest of the night in a condition of horrible alertness.

If we inquire into the ultimate cause of true insomnia we are inevitably led to the conclusion that, for some reason or other, the self-adjusting mechanism has become deranged; the forces whereby the phase of anabolism is brought into play are out of gear, or are at any rate counteracted by other extrinsic forces. From what has been said before it will be remembered that the normal sleeping brain is in a condition of anæmia, and that whatever tends to unduly augment the cerebral circulation also tends to produce wakefulness. A moderate amount of mental activity causes the vessels of the brain to become dilated; but should this activity be long continued or excessive, the vessels become engorged and the vasomotor mechanism ceases to act. Under normal conditions this should only banish sleep for a time; but when the self-regulating mechanism is not working smoothly the vasomotor turgescence, by removing the normal surroundings of the cell, acts as an opposing factor, and the cell is reduced to a condition of "irritable weakness," as the older physiologists termed it.

The line of treatment to be adopted in such cases is obvious. We cannot, perhaps, approach the protoplasm of the cell itself, but we can endeavour so to affect its surroundings as to place it in a condition most favourable to its proper working. Sleep may thus be induced (1) by lessening the cerebral circulation, or (2) by diminishing the irritability of the brain cells. We can accomplish the former by warmth to the feet and cold to the head, by warm food or drink, and by cardiac tonics. Any exciting or emotional causes should be counteracted by bodily exercise and attention to the general health.

Sometimes the posture adopted may have to be altered, as, for example, when the return flow of blood from the brain is interfered with, while no impediment is offered to the supply to it; often the simple expedient of resting with the head high will bring about the desired result.

The irritability of the brain cells can be reduced by the exhibition of any of the usual hypnotics, but here an important question arises. Many of these drugs (*e.g.*, chloral) also affect the circulation, and are dangerous cardiac depressants. Their use is therefore largely being abandoned in favour of the more specific nervous sedatives. This latter class diminish nervous excitability; that is to say, they have a retarding and depressant action on the katabolic phase, and lower the external activities of the cell. Is it not then extremely probable that they also exert a restraining influence on that other phase of cell-life—the phase of anabolism—and lessen the reparative activity, which in normal sleep goes steadily on, preparing the body for the next day's labour? If this is the case it will readily explain why in so many cases the refreshment to be derived from sleep induced by a drug is often negligible, and the result sometimes even harmful. In those cases in which a beneficial result does accrue from their use, it is probable that the drug has only acted by so depressing the vitality of the cell that external stimuli have had no effect upon it, and that this enforced and artificial quiet has, after the arresting action of the drug itself has worn off, permitted a period of natural rest in which the essential processes of repair are carried on in a normal manner.

Arguing from this it would appear advisable always to endeavour to find out the minimal dose that will bring about a refreshing sleep, since such a dose will act with less harm upon the vitality of the cell-body, and will, other things being equal, result in just as long a period of natural repose. This latter statement appears to be fully borne out by my own experience with veronal, one of the latest hypnotics. I find that, in those cases in which it acts at all (and it must be admitted that there is a curious want of efficacy in its administration to some patients), just as good, if not better, effects are procured by an adult dose of 3 to 5 grs. as by the more usual dose of 10 grs.

But, as may be imagined, insomnia is a disease more easily prevented than cured, and our chief aim should be directed toward the prophylactic side of the question. It is hardly an exaggeration to say that the premature death of so many professional and business men is accountable to loss of sleep more than anything else. Plenty of time should be set aside for rest, and no opportunity missed. The quantity of sleep deemed sufficient depends so much on the personal equation that it would be impossible to lay down stringent rules ; but every man should make it his object to have his sleep out, and to rise feeling himself refreshed. Beyond this we can do little more in the way of prophylaxis than strenuously advocate the precept laid down in our first popular text-book of medicine, the " Regimen Sanitatis Salerni " :—

> "Si tibi deficiant medici, medici tibi fiant
> Hæc tria ; mens hilaris, requies, moderata diæta."

In conclusion, if we briefly summarise the various theories as to the causation of sleep, we see that they may be classified into :—

1. *Chemical influences*, which
   - (*a*) directly diminish nerve activity ;
   - (*b*) reflexly affect the circulation in the brain.
2. *Circulatory influences*, the vasomotor centre becoming fatigued owing to its continued activity.
3. *Histological influences* breaking the chain of neurons by
   - (*a*) the shrinkage of the nerve cell during fatigue ;
   - (*b*) retraction of the dendrites ;
   - (*c*) blockage by the insulating neuroglia.
4. *Molecular influences*, whereby sleep becomes the natural expression of a phase of decreased excitability due to
   - (*a*) a predisposing cause—viz., the removal of a certain amount of nerve tonus by the voluntary cutting off of sensory stimuli ; and
   - (*b*) an exciting cause—viz., the setting in of a tide of anabolism following the cumulative katabolism of the day's work, and brought about by the self-regulating adjustment of the cell.

This, I venture to suggest, constitutes the most satisfactory explanation; at all events, it possesses many points which entitle it to earnest consideration. It is, above all things, a comprehensive hypothesis; it strikes down to the very root of existence, the varying conditions of the protoplasmic molecules. Physiologists have surely attached too much importance to changes occurring in the brain—and the brain only. Animals deprived of their cerebral hemispheres will go to sleep in a normal manner; *every* tissue becomes exhausted by over-work, and sleep is a condition which affects every cell in the body. It accounts in a satisfactory manner for dreaming and the causes which lead to it; it demonstrates the reasons for the ravages of insomnia and the deleterious effects of hypnotics, and it at least gives a possible explanation of some of the pathological conditions of the sleeping state. Herein lies at once its greatest merit and its greatest defect. Its merit—in that it appears to be the first attempt to account for these conditions as showing a *variation* from the true physiological state. Elsewhere they are skilfully ignored, the causes of normal sleep being alone considered; or theories are perhaps advanced, but they are isolated hypotheses for each symptom as it arises, and bear no relation to those given to account for normal sleep. Its defect—in that it does not go far enough. What, for example, is the cause of the curious changes in the eyes to be observed in normal sleep, making part of their muscular apparatus an apparent exception to the whole of the rest of the body? Why should loss of sleep stimulate so remarkably the acuity of vision? How are we to account for the anomalous and very varying conditions of the special senses in somnambulism? These are problems which at present would seem to be inexplicable. Possibly the true explanation will for ever remain hidden from us. The physiology of the nervous system is still in its infancy; it is essentially the physiology of the future. Even its distribution and topographical arrangement is a branch of anatomy still largely unworked; the deeper molecular problems dealing with the real nature of the processes occurring in cell and fibre have as yet hardly been touched. But should Hering's conceptions of the relation between anabolism and katabolism pass from speculation to an established truth, an extension of his views (with modifications) to the inner working of the central nervous system may not only enable us to understand something of the nature of sleep, but may even lead to the revelation of many vital phenomena that have so far baffled all inquiry.

GANGRÆNA CUTIS HYSTERICA.

Dr. H. P. Towle, of Boston, communicated a paper on the above subject to the Sixth International Dermatological Congress, held at the Academy of Medicine, New York City, September 9 to 14, 1907. This paper dealt only with those cases of gangrene of the skin which were either of artificial or of so-called spontaneous origin. It did not consider the cases of gangrene which occurred in childhood or which were due to such causes as bacteria, organic diseases of the nervous system, or to obliterative diseases of the vessels. The paper gave the clinical histories of four cases of multiple gangrene of the skin, three in women and one in a man. While the cases varied somewhat from each other in minor details, they were alike in their essential features. They occurred in patients who were more or less markedly hysterical. Each case had suffered some sort of trauma before the appearance of the first gangrenous lesion. The first manifestation was in the immediate neighbourhood of the preceding injury. After varying intervals of freedom, new lesions appeared further and further away from the starting point as time went on. The affection had existed for months, and in one case for years. The changes in the skin from the time of the first appearance of the lesions until they became gangrenous were very rapid, while, on the other hand, healing was very slow. Recurrences never occurred when the patient was under control, and the affection never involved the parts which were not readily accessible. The physical examination showed nothing which would account for the changes in the skin. It was believed the eruptions were all feigned, but the evidence remained purely circumstantial, as none of the patients would confess, and nothing was ever discovered with which the lesions could have been produced.—*Medical Record*, New York, October 5, 1907.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Police Surgeon's Emergency Guide. By C. GRAHAM GRANT, L.R.C.P. and S. (Edin.); Divisional Surgeon H. and Thames Divisions, Metropolitan Police; Surgeon Poplar Hospital, &c. London: H. K. Lewis. 1907. 12mo. Pp. viii + 77.

THE preface to this lucid and unpretentious booklet is one of the very best that it has been our lot to peruse in the course of a prolonged and varied experience of literature: scientific, general and—mixed. The author modestly announces that he "has neither the title nor the desire to pose as an authority," and merely wishes to give his reader the outcome of a prolonged and varied experience of practical working—exactly what every sensible reader will, assuredly, be most pleased to find provided for his instruction. Mr. Grant then proceeds to inform his readers—in two sentences, which we think well worthy of complete quotation—that "the aim of the Guide is to indicate unwritten laws, supply hints, facts and inferences which the text-books do not deal with, and also to place at the surgeon's hand tables and figures which are difficult to recall to the memory. To walk into a police-station with Taylor under one arm and Guy and Ferrier under the other is not a dignified proceeding; but this little book may rest unseen in the pocket, and perhaps justify its existence by saving its owner from making the little dip that leads to trouble."

Our own readers will, we think, agree with us that the perusal of such prefatory sentences leads the experienced critic to expect a great deal in the text; that has certainly been the effect in our own case, and we have pleasure in adding that we were not disappointed. Not only is the amount of information contained in this small book enormous; but it presents, throughout, a lucidity, even in the localities of greatest concentration, and an unquestionable healthiness and precision of judgment in the selection from the bewildering mass of material from which the writer was necessarily obliged to choose, which we have seldom seen equalled and never surpassed. We need hardly add that we cordially recommend the little volume to all general practitioners.

Diseases of the Intestines and Peritoneum. By PROF. DR. HERMANN NOTHNAGEL, late Professor of Special Pathology and Therapy, University of Vienna. Edited, with additions, by H. D. ROLLESTON, M.A., M.D., F.R.C.P.; Physician to St. George's Hospital, and to the Victoria Hospital for Children, London; sometime Fellow of St. John's College, Cambridge. Second Edition, thoroughly revised. Authorised Translation from the German, under the editorial supervision of ALFRED STENGEL, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders Company. 1907. 8vo. Pp. 1059.

EVIDENCE as to the popularity and value of this great work is forthcoming in its history. The English translation was set up, electrotyped, printed, and copyrighted in June, 1904. It was reprinted in January, 1905. Revised, reprinted, and recopyrighted in May, 1907, it is issued as a second edition within three years of its first publication. It is the first of the volumes constituting Nothnagel's "Encyclopædia of Practical Medicine" to reach the dignity of a second edition.

Not a little of this conspicuous success is due to the ability which the English editor, Dr. H. D. Rolleston, has displayed in the discharge of the literary task assigned to him by the Editor-in-chief of the English edition of the Encyclopædia, Dr. Alfred Stengel. While a very considerable number of additions have been necessary, Dr. Rolleston assures us that "the text, a lasting memorial of the distinguished author whose death we have unfortunately to deplore, has been religiously respected, with the exception that a few case histories have been omitted."

Dr. Rolleston expresses in grateful terms his indebtedness to Mr. D'Arcy Power, Surgeon to St. Bartholomew's Hospital, "for his kindness in reading and making additions to the section on Intussusception—a subject which he has specially made his own," and to Dr. Arthur Jex-Blake, one of the Assistant Physicians to St. George's Hospital, for his assistance in bringing the introductory chapters up to date.

A copious bibliography and a good index bring the work to a close. In the former, which is arranged alphabetically, the late Dr. S. Myles M'Swiney's name appears under the letter S. as "M'Sviney." German authorities—perhaps naturally—loom large in the bibliography, in which, however, we find the names of Abraham, Allingham, D'Arcy Power, "Bouchanan," Brunton, Cash, Da Costa, Curling, Deaver, Dickinson, Elliott, Fenwick, Ferguson, Finney, Fowler, Good, Greenwood, Gross, Habershon, Hartley, Hunter, Illoway, Johnston, Allan Jones, H. Jones, Joy and Wright, Keen, Kelly, Kelynack, E. Klein, Lynch, M'Burney, Mall, "Willy" Meyer, M'Murtry, Perry and Shaw, Poland, Ransom, Riesman, Robinson, Sutherland, "M'Sviney," Treves, G. J. Turner, Waterhous, R. F. Weir, Hale White, Whitties, Willard, Ezra Wilson, Woodward. These represent the chief British and American authorities who are mentioned by name in the Bibliography. Many others are quoted in the text.

Antiseptic Methods for Surgical Nurses and Dressers. By Harold Upcott, F.R.C.S. London: Baillière, Tindall & Cox. 1907. Crown 8vo. Pp. viii + 51.

This elementary little book is well printed, tastefully bound, and furnished with ten illustrations. The author is evidently a master of his subject—we may add, a discriminating and conscientious one. He has carefully winnowed, sifted, ground, cooked, and peptonised the scientific professional pabulum which he here presents to the semi-initiated readers for whose cerebral nutrition he has undertaken to provide. He explains that "antiseptic methods" are taken to mean those methods of procedure which are planned to avoid the occurrence of sepsis. An antiseptic method of surgery does not aim merely at the destruction of septic micro-organisms, but also comprises those measures which have for their object the prevention of sepsis in wounds by recognising the normal processes of repair and the bactericidal powers of healthy tissues. He then adds that "antiseptic surgery had, formerly, a more limited interpretation; its progress was also limited by its empirical trust in the efficacy of chemical disinfectants. The lessons learnt in the narrower field of antiseptic surgery, combined with a more accurate knowledge of the relations between bacteria and the living tissues of the body, have led to the modern wider view of antiseptic surgery, which has been called, in contradistinction to that earlier stage in its progress, aseptic surgery." On reading these sentences we wondered that the more modern adjective did not appear on the title-page. And an excellent account our author gives of its most recent methods, applications, and results.

American Medical Directory. Volume I. A Register of Legally Qualified Physicians of the United States and Canada. Chicago, Illinois: American Medical Association Press; W. B. Saunders Company, agents for Great Britain, Australia and India. 1906. 8vo. Pp. 1482.

"For the first time in the history of American medicine a directory has been issued which is owned, compiled and published by the medical profession for its own use and purposes." This sentence from the "Foreword," as it is called, explains the publication of a work which supplies a gap in American medical literature.

The preparation of the ponderous tome before us has occupied nearly two years. Its compilation necessitated a systematic examination and revision of the official records of the State licensing boards, medical colleges and medical societies of the United States. The work is published under the auspices of the American Medical Association. The first volume runs to 1,482 pages. It is bound in half leather, and costs thirty-five shillings net.

The work contains, in addition to the official list of legally qualified practitioners in the United States, complete information regarding the laws regulating the practice of medicine and full particulars as to the constitution of the State boards of health and the medical examining boards and colleges. It is, therefore, a veritable mine of information. From its pages we learn that the total number of "physicians" in the United States is 122,167. All these are named in the directory, as well as 6,006 physicians who are legally qualified in the Dominion of Canada.

Reference to the various States is made easy by thumb insets at the edge of the page.

Ophthalmia Neonatorum: With Special Reference to its Causation and Prevention. By SYDNEY STEPHENSON, M.B., C.M. London: George Putnam & Sons, The Ophthalmoscope Press, Ltd. 1907. Pp. 258.

MR. SYDNEY STEPHENSON, in publishing in book form his "Middlemore Prize Essay of the British Medical Association, 1907," has given to the ophthalmic world a treatise of much value, not only as a book of reference, but also as a sound practical guide to the diagnosis and treatment of a disease which, though entirely preventable, accounts for a very large proportion of the blind eyes found in our asylums. The mass of information, both statistical, clinical and experimental, which the author has collected, represents a vast amount of work and care, and the volume, written as it is in a clear style and in good English, is one worthy of the best traditions of English medical literature.

The matter is arranged under nine heads—"Introduction," "Ætiology," "Symptoms and Histology," "Diagnosis," "Prognosis," "Prevention," "Treatment," "General Conclusions," and "Appendix." Statistics show that about sixty-seven per cent. of all cases of ophthalmia neonatorum are due to gonococcal infection; the remainder of the cases being due to the presence of other infective organisms. Mr. Stephenson fully believes in *ante-partum* ophthalmia, and gives nineteen cases of this condition which he has personally observed. We were interested to note that he now places argyrol in a very foremost place amongst the curative applications, in spite of the fact that laboratory experiments place this silver salt so very low in the bactericidal scale. "The Laboratory," he says, "obviously cannot re-produce the conditions of the human body, even roughly. When all is said and done, the supreme test of the action of a given remedy is to be made in the actual clinical work. . . . As regards argyrol, assuming that it possesses little germicidal power, it simply means that its well-authenticated clinical activity is due to some other property not yet disclosed by the microscope and the culture tube." He also uses protargol, silver nitrate, and other applications according to circumstances.

To all who wish for a complete treatise on this curse of civilisation—ophthalmia of the newly born—we heartily commend this most readable volume.

Diseases of the Nose and Throat. (The Medical Epitome Series.) By J. BRUCE FERGUSON, M.D.; Instructor in Diseases of the Nose and Throat in the Postgraduate Medical School and Hospital, New York. London: Hodder & Stoughton.

THE Medical Epitome Series is intended to appeal to the undergraduate and postgraduate medical student rather than to the specialist.

The method of division of the work into the regions is good, and enables references to be easily made, though one doubts the utility of the lists of questions at the end of each chapter, as it savours rather of the crammer than the ordinary textbook.

The technique described for the operation of adenoids can hardly be said to be the one in most use, and certainly would be difficult for a general practitioner to carry out. The curette is usually the simplest and best instrument to use.

In dealing with the accessory sinuses, we have not been able to find any reference to the sphenoidal sinuses; possibly the author considers its treatment as too difficult to be mentioned;

but, surely, the symptoms might be included in those under the heading of ethmoiditis, and differentiated therefrom.

On page 160 the line given for opening a Quinty abscess is incorrect, as it should be a line drawn from the base of the uvula to the last upper tooth (not the lower molar tooth).

Figure 96 is a little misleading, as all authorities agree that intra-laryngeal injections should be done under the guidance of the eye, with a mirror, and not merely by guess work.

Saving these few critical remarks, the information given is concise and useful, and the little book should prove helpful.

Cancer of the Womb: its Symptoms, Diagnosis, Prognosis, and Treatment. By Frederick J. M'Cann, M.D., F.R.C.S., M.R.C.P.; Physician to In-patients Samaritan Free Hospital for Women; Lecturer on Gynæcology, Medical Graduates College, and Polyclinic, London, &c., &c. Pp. x and 172. With XLVI. Plates. London: Henry Frowde and Hodder & Stoughton. 1907.

Dr. M'Cann's book may be divided into two parts—a theoretical portion dealing with the anatomy, ætiology, microscopical appearances, &c., of cancer of the uterus, and a practical portion dealing with its diagnosis and treatment.

The theoretical portion appears to us to be written with great care and detail. Personally, we doubt that the chapters on anatomy and ætiology are of great value. The former is too short to be of use from an operative standpoint, while the second, though it contains some interesting tables showing the ages at which the different forms of cancer of the uterus appear, deals necessarily in the main with the ætiology of cancer in general—a subject which belongs properly to works on pathology.

The practical portions of the book interest us more than do the theoretical portions, and by them, in our opinion, the book will sink or swim. On the subject of diagnosis there is not very much to be said, though Dr. M'Cann writes an interesting chapter upon it. The diagnosis of uterine cancer is either so obvious that it forces itself upon us or so obscure that nothing but a microscopic examination of removed tissue will enable us to make it. Therefore, in every case in which there is any reason to suspect the existence of cancer such an examination must be made.

The treatment of cancer of the uterus is another matter. There are few subjects on which so much work has been done of late or on which so much alteration has occurred in the opinions of gynæcologists. Here, then, Dr. M'Cann has a legitimate opportunity for prolonged discussion. It is, therefore, somewhat of a shock to find that the chapter headed "The Surgical Treatment of Uterine Cancer" is composed of eleven pages, whereas a later chapter in the book, dealing with "Cases," is composed of sixteen or seventeen pages. There is, however, in reality a further space devoted to surgical treatment, because in Chapter VIII., headed "The Value of Vaginal Total Extirpation of the Cancerous Uterus," we find eight more pages devoted to "the extended abdominal operation." Therefore, the first conclusion to which we must come as to the method in which Dr. M'Cann handles the subject of "treatment" is that he devotes a great deal too little space to it, and what he has written is badly arranged.

Now, as to what he teaches. The first sentence of the chapter on the surgical treatment of uterine cancer reads: "The operations employed in the treatment of this disease aim *either at a partial removal of the uterus*, together with the cancerous growth, or a complete removal of the entire organ, or removal of the uterus, together with the parametrium," &c. (the italics are ours). Then follows a description of "the principal methods of partial removal of the uterus. Dr. M'Cann closes these sections by referring, we suppose as a kind of justification, to statistics collected by Krukenberg in the years 1885-91, and adds, as his own deliberate opinion: "It is obvious from these results that commencing carcinoma of the vaginal portion can be effectually treated by this partial operation." We may notice *en passant* that his bibliographical references on partial vaginal operations contains no date later than 1898, a fact which we think speaks for itself.

Dr. M'Cann then proceeds to a description of the abdominal total extirpation of the uterus as he performs it. The description of his operation occupies one page of a book of 161 pages. It is a suitable description to appear in a students' manual of gynæcology of an operation for fibro-myomata of the uterus, but it is not suitable to appear as a description of the operations of choice in a monograph on cancer of the uterus.

The briefest outline of Werder's operation follows, and of a vagino-abdominal operation. Then follows a description of vaginal hysterectomy, occupying four and a half pages, followed by half a page descriptive of Schuchardt's operation.

The next chapter, which, as we have already said, professedly deals with the value of vaginal extirpation, contains a reprint of Wertheim's article on the extended abdominal operation. It also contains the repetition that "cancer affecting the vaginal portion in the initial stages can be cured by vaginal hysterectomy or supravaginal amputation of the cervix," and the statement that the author "is a strong advocate of the extended abdominal operation." It is well that the author has made this confession, for up to this the reader would never have suspected that such was his attitude.

We fear that the next conclusion to which we must come with regard to Dr. M'Cann's practical teachings is that he has taught us nothing new, and that he has lent his aid to the resurrection of old heresies, which (as Professor Winckel said of laparo-elytrotomy) have long sunk into a silent grave.

The chapter on the after-treatment of operations includes, amongst other matters, remarks on operating in general, drainage, suture of the abdominal wall, preparation of the patient for vaginal operations, use of clamps, none of which seems to us to be exactly pertinent to the subject of the chapter. The author says that some of his views are at variance with what is generally accepted, and we think that perhaps that is so. Certainly his view, that it is only recently that the importance of the arrangement of the omentum after operation has been recognised, is quite new to us. So is his view that a sixtieth of a grain of strychnin is the usual hypodermic dose in cases of post-operative collapse. So is his view that "if peritonitis is well established I unhesitatingly declare that a purgative will kill the patient." On the other hand, Dr. M'Cann's views on the early administration of solid food after operation are worthy of attention.

Chapter XII. deals with "Cases," and contains the notes of forty-two cases of uterine cancer, one of vaginal cancer, and two of "deciduoma malignum." In spite of the author's statement that he is a strong advocate of the extended abdominal operation, we find that every one of these cases was operated upon by the vagina! We further learn that, though the author "now more frequently adopts the abdominal method," still a further series of vaginal hysterectomy cases are to be published at a later date.

We have already suggested that the subject-matter of the chapters in this book does not always correspond with the titles of the chapters, and we would now further suggest that the statements at one part of it are not always consistent with those at another.

The plates are forty-six in number, and are as a rule good. Plates taken from other sources should be, however, acknowledged, not merely in the preface, but on the plate itself. Out of twenty men who see the plate in the book, there is only one who notes the acknowledgment in the preface.

The Dublin University Calendar for the Year 1907–1908. Vol. I. Dublin: Hodges, Figgis & Co. 1907. 8vo. Pp. vii. + 58* + 460.

WITH the opening of Michaelmas Term comes this guide to the Ordinary and Honour Courses in Arts and in the Professional Schools of the University of Dublin. As usual, the ordinary papers set for undergraduates in the year 1906–1907 are printed in this volume. The second volume of the Calendar for the current academic year will be published in January, 1908.

In the Regulations for the School of Physic mention is made for the first time of the Edward Hallaran Bennett Medal and Prize, founded in the present year by his past pupils "in appreciation of his eminent services to the surgical profession, and of his many acts of kindness to them while students." A bronze medal and a money prize are awarded respectively to the winner and to the second best candidate at the Surgical Travelling Prize Examination.

Mr. M. W. J. Fry, M.A., F.T.C.D., has, as usual, discharged his editorial duties with rare ability and success.

The Calendar should be in the hands of every undergraduate and professional student.

Hay-fever, Hay-asthma: Its Causes, Diagnosis, and Treatment. By William Lloyd, &c., &c. London: Henry J. Glaisher. 1907.

The monograph under review is chiefly interesting from the fact that the author gives his personal experiences of the treatment of one of our most troublesome and unfortunate complaints.

Anything which renews the hope of cure and stimulates the practitioner to further efforts for the relief of so troublesome an affection as hay-fever must surely do good, and his presentation of the facts and theories connected with it is plain and simple.

He says on page 29—"There are three factors in the ætiology of an attack of hay-fever, viz.—First, the presence of hypersensitive areas in the nasal mucous membranes; if accompanied by asthma similar areas are detected in the pharynx. Second, a diseased, or at least an irritable, condition of certain nerve centres, giving rise to symptoms in the nose itself or in more or less distant parts by reflex action. Third, the presence of pollen. The absence of any one of these factors is sufficient to prevent an attack."

And he very truly differentiates between the true type of hay-fever and what should best be termed pseudo-hay-fever, the chief difference between the two being that in the true the symptoms are produced entirely by the pollen of grass; whereas in the pseudo form there are various different causes which produce irritation of the hypersensitive area.

He makes the following remark:—"The presence of hypersensitive areas are readily distinguishable by their heightened colour and slight elevation above the surrounding mucous membrane." And one only wishes that the diagnosis was as simple as is there stated; but, alas! in most cases, it is more or less guess-work.

Tropical Diseases: A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, K.C.M.G., M.D., LL.D. (Aber.); F.R.C.P. (Lond.), F.R.S. New Edition, thoroughly Revised and Enlarged. With 7 Coloured Plates and 241 Illustrations in the Text. London, New York, Toronto, and Melbourne: Cassell & Co., Ltd. MCMVII. Cr. 8vo. Pp. xx + 876.

A surprising activity in the study of tropical diseases in the twentieth century and the corresponding rapid advance in our knowledge of the same rendered a new edition of Sir Patrick Manson's classical work inevitable.

We have compared the present edition with the third, which was published in April, 1903, and reprinted in August of the same year and again in 1904, and we find that the principal alterations and additions are in Section I., dealing with "fevers." Under this heading are included and described malaria, trypanosomiasis of man, kala-azar; relapsing, yellow and blackwater fevers; spotted fever of the Rocky Mountains, endemic in limited districts of Montana and Idaho, United States of America; dengue, Japanese river-fever (Shima Mushi), plague, Malta or Mediterranean fever, typhoid fever and typho-malarial fever, imperfectly differentiated fevers of the tropics, pellagra, and heatstroke.

We could have wished that the author had dealt more exhaustively with the subject of typhoid fever as it shows itself in the tropics. As it is, he contents himself with a reference to Sir Almroth Wright's researches on anti-typhoid inoculations, and says (page 315) that "it is not requisite to enter further into the subject of typhoid fever, for although this important disease is abundantly common in the tropics, it is not properly classifiable as a tropical disease; moreover, it is fully dealt with in every text-book on general medicine."

In his account of beri-beri (pages 356 to 387), Sir Patrick Manson observes that "if there is anything peculiar about the *post-mortem* appearances in beri-beri, it arises from the somewhat special implication of the central and peripheral organs of the circulation—namely, dilatation of the heart, especially of the right side, and great accumulation of blood in the right heart and in the veins." The author offers no explanation of this pathological condition, but we may remind our readers that various pathologists, more especially of the French school, have made it almost certain that in various infectious diseases, both acute and chronic, local inflammatory changes occur in the walls of the aorta and other blood-vessels even in very young patients—nay more, even in children. It is assumed that these changes are due to the action of bacteria or their toxins on vasa vasorum, causing thickening of their walls and plugging by thrombosis, thereby producing nutritive changes in the walls of the aorta or of any other vessel having vasa vasorum. Dr. C. Bäumler, of Freiberg, Baden, discussed this question at some length in an article on the treatment of arterio-sclerosis in Penzoldt and Stintzing's "Handbuch der speciellen Therapie der innerer Krankheiten" (Vol. III., Part 5, pages 66–72). A paper also appeared in the *Wiener Klinik* for 1896 (Vol. XXII. Hefte 11 und 12) by Dr. Weintraub, in which the occurrence of endo-arteritis in beri-beri is specially mentioned.

This edition has been well brought up to date. For example, under the heading "Local Diseases of Uncertain Nature," a brief account is given of MacLean's description of "Big Heel," or endemic hypertrophy of the os calcis, which was published in the *Journal of*

Tropical Medicine for November, 1904; also of Yale Massy's papers in the numbers of the same journal for September, 1904, and April, 1907, on "Onyalai"—a peculiar disease occurring among the natives of Portuguese West Africa, and also on the Lualaba River. It is characterised by the formation of a number of vesicles, distended with blood, from a quarter to half an inch in diameter, on the hard palate and on the inside of the cheeks. Some of the vesicles are umbilicated.

Another novel feature in this edition is an appendix containing full information as to the protozoa of the blood of vertebrates. It includes a very comprehensive classification suggested in the present year (1907) by Sambon, and furnishes another proof of the thoroughness with which the work has been kept abreast of advancing knowledge.

The volume is illustrated with seven coloured plates and 241 plain figures in the text. The plates are highly artistic, and add much to the appearance of the book, which has of necessity increased in size and cost. The net price is now twelve shillings and sixpence—an advance of two shillings; but the book is worth every penny of the money, and should be in the hands of every physician at home as well as abroad.

The Practical Medicine Series: General Medicine. Edited by F. BILLINGS, M.D.; Head of Medical Department, Rush Medical College; and J. H. SALISBURY, M.D.; Professor of Medicine, Chicago Clinical School. Series 1907. Chicago. Agents for Great Britain: G. Gillies & Co., Glasgow. Pp. 364.

THE "Practical Medicine Series" represents a new year-book on the various branches of medicine and surgery, which is to be completed in ten volumes. That before us is devoted to general medicine. It contains a very careful and full account of the medical work of the year—indeed our chief criticism is that it appears to be almost too full: some of the pages are taken up with statements that can hardly be called new, and we think that further condensation would have made the work more useful. Still the volume contains a valuable account of a vast mass of medical literature, belonging to almost every country, in a form that can be consulted with facility.

The index, an important part of a volume such as this, is only fair.

Diseases of the Larynx. By HAROLD BARWELL, M.B. Lond., F.R.C.S. Eng., &c., &c. London: Henry Frowde; Hodder & Stoughton.

THE Oxford Medical Manuals are intended for the use of the general practitioner, and, certainly, the one concerned with the diseases of the larynx under review fulfils its ideal. Short and to the point; no unnecessary descriptions of rare and exceptional diseases or operations are included; and helpful remarks for diagnosis and treatment are given under each heading.

The illustrations are particularly good, and show clearly—though not coloured—the form that the various diseases take in the larynx.

The pictures of instruments are those in general use; not, as one often finds, antiquated patterns.

Mr. Barwell's descriptions of the various simple operations are complete and good; and while, of course, some of them would practically entail the manual dexterity of the specialist to perform, they are wisely included, so as to make the subject complete.

His advice on the treatment of tuberculosis is plain, and he particularly points out the danger of the use of cocaïn.

One may confidently recommend this book to anyone who wants help in throat work, as the information is short and easily found, and the whole book could be read through in an evening.

Gall-stones and Diseases of the Bile-ducts. By J. BLAND-SUTTON, F.R.C.S. Eng.; Surgeon and Lecturer on Surgery to the Middlesex Hospital, &c. London: James Nisbet & Co. 1907. Cr. 8vo. Pp. 233.

MR. BLAND-SUTTON'S work in the domain of surgery is too well-known to need any commendation from a reviewer. The neat volume which lies before us cannot add to his reputation as a writer on practical surgery, but it maintains that high reputation. It may be studied with profit by physicians as well as by all surgeons who wish to keep themselves abreast of modern surgery.

The work consists of a series of lectures on cholelithiasis and diseases of the bile-ducts and their treatment, which the author delivered at the Middlesex Hospital. It is well illustrated with forty-seven drawings.

The opening chapter gives an admirably clear account of the anatomy of the excretory apparatus of the liver and of the physical characters and functions of the bile. In Chapter II. the author treats of infections of the bile-ducts and gall-bladder. Gall-stones, their form, structure, composition, and mode of formation, are dealt with in Chapter IV.; while their pathological consequences are the subject-matter of the fifth chapter—one of the most interesting in the book.

It is not until the fourteenth chapter that the operative treatment of diseases of the excretory apparatus of the liver is approached. The author well remarks that success in this department of surgery depends in general on manipulative dexterity, on minute attention to the details of asepsis, and particularly on careful drainage.

In the closing chapter (XVIII.), Mr. Bland-Sutton gives statistics as to the mortality of operations performed for the relief of gall-stone disease. These statistics go to show that the risk to life from these operations is serious.

Transactions of the Clinical Society of London. Volume the Thirty-ninth. London: Longmans, Green & Co. 1906.

No annual more faithfully reflects medical progress than the "Transactions of the Clinical Society." In the thirty-five papers published in the present volume of the transactions no branch of clinical medicine is left untouched, and every paper may fairly be considered as a valuable contribution to our knowledge of the subject dealt with. Taken as a whole, the reader must be struck with the frequency with which the physician of to-day calls surgery to his aid. We may refer to Dr. Goodall's paper on "Typhoid Fever," Mr. Simpson's on "Ruptured Spleen," and others. We do not know of any more useful volume for both consultants and general practitioners.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. Magee Finny, M.D., F.R.C.P.I.
General Secretary—James Craig, M.D., F.R.C.P.I.

SECTION OF MEDICINE.

President—J. M. Redmond, M.D., P.R.C.P.I.
Sectional Secretary—F. C. Purser, M.D., F.R.C.P.I.

Friday, May 17, 1907.

Dr. Kirkpatrick in the Chair.

Lympho-Sarcoma of the Left Lung.

Dr. Craig read the clinical notes on a case of lympho-sarcoma of the left lung, and exhibited the *post-mortem* specimen. The patient was a man, aged forty-six, who thought he had caught a cold in October, 1906. He was treated in hospital for bronchitis. His most marked symptoms at that time were orthopnœa, cough, and occasional blood-stained sputum. He came under Dr. Craig's care on March 12, 1907. He had orthopnœa, cough, frothy expectoration, œdema of lower limbs, slight ascites, albuminuria, systolic aortic murmur. The left lung showed physical signs of complete solidification, with thickened pleura. His abdomen was tapped on March 30, 1907, and chylous fluid was drawn off. His voice became husky, and he had severe pain over the cardiac region. He died on April 4, 1907. *Post-mortem* revealed chylous fluid in the abdomen, enlarged and congested liver; nothing else abnormal. Pericardium was distended with sanguineous fluid, and subserous hæmorrhages were observed in many spots. Cardiac valves were healthy. A white, opaque, homogeneous, spherical tumour occupied the greater portion of the left lung. Section of enlarged lymphatic glands showed in the substance of the tumour. Secondary growths were present in the rim of lung tissue which the primary growth had not invaded. Portions of the tumour extended along the course of the left pulmonary veins, the pulmonary artery, and the aorta, so as to appear within the pericardium. The entire adherent left pleura was about one-eighth of an inch in thickness, but had no connection with the tumour. The tumour appeared to have started in the bronchial glands, and spread outwards.

Some Cases of Tuberculosis treated by Professor Deny's Tuberculin.

Dr. Frank J. Dunne exhibited six cases of tuberculosis treated by Professor Deny's tuberculin in the South Dublin Union Hospital.

The Chairman desired to know if Dr. Dunne considered that the local and general reaction, which was so marked in some of the cases, was a necessity, or whether it would not be better to reduce the dose, so as to reduce the initial reaction, and try and spread it over a longer period.

Dr. Stevenson showed X-ray photographs of the case in which the wrist was involved, and said he could not say from the photographs alone whether there was any disease in the bone; clinically there did not seem to be any disease now, but the photograph simply showed that there had been diseased bone removed.

Dr. Craig, General Secretary, expressed the thanks of those present to Dr. Dunne for his exhibits; they were, he said, greatly impressed by the excellent results obtained, and highly appreciated Dr. Dunne's work.

Dr. Moorhead asked if the cases were all in which the treatment had been tried or were a selection. He had seen two of them when they were very bad, and was much impressed with the improvement. He was also desirous to know if Dr. Dunne had found the opsonic index raised by the injection of Deny's tuberculin.

Dr. Dunne, in reply, said he agreed with the Chairman in regard to the reduction of the dose. In fact he commenced the girl with the wrist with five parts in a million, and did not know what would have happened if he had given her the dose of half a milligram, which is recommended, of Koch's tuberculin. Tuberculin at present had to be used with very great care, and he believed the ordinary trial doses were too strong. The cases were selected from the one-third of the total (150) which he injected. He selected them because they were affected in a way that could be seen; but many of his pulmonary cases—which were difficult to demonstrate—were quite as good. He hoped later to present a tabulated return; pressure of work had prevented his making it, as well as trying the opsonic index.

An Obscure Case of Nervous Disease.

Dr. Winter exhibited an obscure case of nervous disease. The symptoms were, he said, vague. The main thing was exaggerated reflexes, and the patient had a sensation, sometimes of pain and sometimes of numbness and tingling, in his left arm and leg when he got out of bed. Sometimes he got a spasm in his calf and the three outer fingers of his left hand. His superficial reflexes were normal.

The Chairman said he would hesitate to diagnosticate the case. There were a number of points which rendered it almost certain that it was a case of disseminated sclerosis; but he was not familiar with the marked spasm as a symptom.

A Case of Spleno-medullary Leukæmia.

Dr. A. R. Parsons read a paper on a case of spleno-medullary leukæmia which had undergone a very remarkable improvement under treatment with arsenic—improvement both in the size of the spleen and the condition of the blood.

Dr. Craig recalled a case in which the spleen, under arsenic treatment, used to disappear quite beneath the costal arch, so much so that he thought the man was cured. He returned, however, a couple of times to hospital, although taking fairly large quantities of arsenic. In the end he died of general tuberculosis, and at the time of death the spleen was fairly large, though not so large as on previous occasions. Dr. Parsons had shown them a remarkable cure, but with his own case in view he would hesitate before saying that the condition would not recur.

Dr. Kirkpatrick asked Dr. Parsons if he had formulated any opinion as to the relative merits of the treatment by arsenic and by X-rays, or by both in combination. Dr. Craig's case showed that it was possible to cause the disappearance of the symptoms by drugs; but it was important to find whether not only a disappearance of the symptoms, but a cure, could be effected by the X-rays.

Dr. Drury cited the case of a woman who had a much larger spleen than Dr. Parson's patient. Every drug treatment was tried without result. Then they tried the X-ray treatment alone, and the spleen was enormously reduced. Ultimately she died of syncope.

Dr. Parsons, in reply, said he had purposely avoided using the word *cured*. So far as he knew there was no case of *cure* on record. The improvement in the case had continued even after the arsenic was stopped. In another case, a lady, fifty-five years of age, who had been on arsenic for about five months, the treatment had produced diarrhœa and vomiting. She then came to him, and, as the arsenic had made no improvement, he put her under X-rays. After twenty sittings the spleen commenced to subside, and there was also a marked diminution in the white corpuscles. The case, therefore, proved that the X-rays alone could bring about a remarkable improvement.

Notes on a Case of Cerebellar-Pontine Cyst.

Dr. Peacocke read notes of a case of cerebellar-pontine cyst, which occurred in a man, aged thirty years. His symptoms were frontal headache, giddiness and staggering gait, failing sight, and deafness of the left ear. There was no vomiting. Examination showed paralysis of the muscles supplied by the seventh nerve on the left side and loss of sensation on the left side of the face. There was no loss of power or of sensation in the legs or arms. The thoracic and abdominal organs were healthy. Examination of the eye showed optic neuritis, with small hæmorrhages and white patch in the neighbourhood of the optic disc. There was no elevation of temperature, and the pulse was normal. He died quite suddenly, about six months after the first onset of symptoms. *Post-mortem*, made thirty hours after death, showed a cystic growth involving both cerebellum and pons on the left side. Microscopic examination showed that the brain tissue adjoining the cysts showed two different tissues :—(1) Composed of spindle-shaped elements, very cellular, and resembling in all respects a spindle-celled sarcoma. (2) A tissue composed of smaller cells (neuroglial).

Dr. Parsons said that hardly any cases were more trying than brain cases, and he desired to know if the question of operative interference had been raised. If the surgeon had been able to strike the cyst, the eyesight might have been saved.

Dr. Craig instanced a case in which loss of hearing gave a fair opportunity of localising the tumour, but the operation failed, and the girl died.

Dr. Moorhead said the question raised by Dr. Parsons was very important. In cases where localising symptoms made the position certain, he thought that early operation should be recommended.

Dr. Peacocke, in reply, said that the question of operation did suggest itself to him, but no one else who saw the case suggested it.

SECTION OF OBSTETRICS.

President—R. D. Purefoy, M.D., F.R.C.S.I.
Sectional Secretary—H. Jellett, M.D., F.R.C.P.I.

Friday, May 24, 1907.

The President in the Chair.

Specimens.

Dr. Henry Jellett exhibited the following specimens:—(*a*) Uterus and upper two-thirds of vagina removed by Werder's method for cancer of the vagina; (*b*) remainder of vagina and inguinal glands from the same case. They were, he thought, of interest from both the operative and pathological standpoint, as cancer of the vagina was a very rare condition. The specimen had been removed from a patient, aged thirty-nine. She stated she had menstruated regularly up to the present time, but that there had been a certain amount of leucorrhœal discharge, which had been gradually increasing. She had not suffered in any way from hæmorrhage. Her general health was good, and she had not lost weight. On examination he found, first of all, that there was a condition of the cervix somewhat resembling an erosion. It was congested, and bled when touched. On the anterior vaginal wall there were several nodules about the size of a hazel nut, extending half-way down the wall, and upwards almost to the cervix, and so close that for that and other reasons he believed the case to be one of intra-cervical cancer that had grown out on to the vagina.

The case was a favourable one, and he decided to perform the operation described as Werder's operation. The operation went off better than he expected, there being practically no hæmorrhage. He removed the uterus, appendages, broad ligaments, and upper two-thirds of the vagina, but did not do a very extensive para-uterine dissection, as there seemed to be no indication for it. He separated the anterior vaginal wall practically down to the urethral orifice, and the posterior wall half-way down. The patient made a favourable recovery. He sent the specimen to Dr. Rowlette, who reported as follows:—

"Specimens submitted by Dr. Jellett—(*a*) Uterus and appendages, with part of vagina; (*b*) remainder of vagina, with inguinal glands.

"(*a*) Vagina shows ulcerating patch, about one and a half inches in diameter, situated in anterior wall. Microscopically, this patch shows proliferating masses of epithelioid cells. In parts the cells show considerable resemblance to gland-tissue, empty spaces being surrounded by proliferating masses of cells. The condition is malignant. In other parts the cells are in solid masses. The uterus presents a firm, white cervix, which on section exhibits one or two small cysts. Microscopically, the cervix presents much fibrous tissue. The covering epithelium is regular, but covered with fibrino-purulent exudate. The glands in some parts are normal, in others dilated and cystic. The endometrium of the body is soft and friable. Microscopically, it shows congestion and neurotic changes, but the glands are quite regular. One ovary is firm and hard, showing microscopically much fibrous tissue. The other has some small cysts.

"(*b*) Examination of the remainder of the vagina and the glands is quite negative. The glands are hard and firm, but do not, as far as examination shows, contain any secondary deposits of cancer."

There was no involvement of the rectum, bladder, or breasts, or of the intestinal tract, or anywhere else that caused any symptoms, or a tumour that could be felt. Such being the case, he thought it prudent to remove the remainder of the vagina and inguinal glands.

DR. HASTINGS TWEEDY said it appeared to him, from the description, to be a case of malignant disease of the vagina pure and simple; he was therefore anxious to know why Dr. Jellett considered the removal of the uterus necessary.

Dr. Rowlette said the pathology of the tumour was of great interest because of its peculiar type. On first examining the vagina he had little doubt that he would find adeno-carcinoma of the body of the uterus, but on cutting the uterus and finding no primary focus of the disease he had, he thought, to conclude that it was primary in the vagina. It was possible that it was an adeno-carcinoma originating in Wolffian remains, or it might be an endothelioma.

Dr. Jellett, in reply, said the uterus was removed both because he believed the case to be one of intra-cervical carcinoma extending into the vagina, and because in any case of vaginal carcinoma, if the entire vagina had to be removed, it is necessary also to remove the uterus. He had previously cystoscoped the bladder and found the wall healthy.

The Report of the Rotunda Hospital for the Year 1905–6. *Adjourned Discussion.*

Dr. Neill congratulated Dr. Hastings Tweedy, the Master of the Rotunda Hospital, on the extent of the report and the work done. In the case of unavoidable hæmorrhage, he thought it would have been better to have brought down a leg and to have allowed the patient to deliver herself.

Dr. Jellett referred at some length to a case of concealed accidental hæmorrhage to which he had been called from the Rotunda some ten years before. He had found a patient with a pulse of anything above 120, and a uterus which had increased in size in a few hours from the umbilicus up to near the ensiform cartilage, and with the diagnosis of concealed accidental hæmorrhage on her face. He performed Porro's operation, and found the placenta floating about in the uterus, which was full of blood. At a subsequent discussion his treatment was objected to on the ground that a large number of cases of concealed accidental hæmorrhage had been successfully treated by other means. If that were so, then Porro's operation was unjustifiable, but he was of opinion that the cases referred to were in reality cases of external hæmorrhage. Dr. Tweedy stated that the case in the report was the first case he had ever seen, and he (Dr. Jellett) had made out some statistics on the matter, which showed that up to the year 1896 only five cases had occurred amongst 43,000 patients in the practice of the Rotunda. He believed Dr. Tweedy's statement to be perfectly correct, that such cases were of extreme rarity, and that, considering the very severe mortality in them, it was a mistake to try to promulgate the idea that they were common, and that they were amenable to treatment suitable and excellent in the case of external accidental hæmorrhage. Dr. Tweedy had a theory that a plug in the vagina would compress the uterine arteries; that theory was susceptible of proof, as, if the uterine arteries were compressed, the child would die, and that the child did not always die was proved by a case in Dr. Tweedy's present report. If a uterus from which no blood was escaping went on increasing in size he thought it was fallacious to suppose that a plug would make any difference, and the only thing that could be said for it was that it might bring on labour. He suggested that the condition was to all intents and purposes identical with that of internal hæmorrhage anywhere else, and consequently the correct treatment was to get to the bleeding point from above or from below, and stop the hæmorrhage at its point of origin.

Professor Alfred Smith regretted he could find no advance in the teaching of midwifery in the report, or that the recognised methods of treatment were not set out in greater detail. As a teacher of students he would be glad to know why Dr. Tweedy altered the old-established division of *ante-partum* hæmorrhage. Again, he thought the results of the standard of morbidity were extremely remarkable. The Rotunda Hospital estimate made it a remarkably good standard, whereas the British Medical Association standard made it the same as last year. The question of which was the better standard was of importance to anyone estimating statistics. Then, in the treatment of abortions, it was not stated what kind of active interference was resorted to. He made the criticisms with a view to eliciting greater detail for the benefit of those who, like himself, would turn to it for information and enlightenment. He congratulated Dr. Tweedy on the excellent results which had been achieved.

Sir William Smyly said that, while he recognised the great difficulty in compiling tables, he agreed with Professor Smith as to the advisableness of having more details in regard to interference in abortion, particularly as to the number of cases in which interference was necessary, and the nature of the interference. He regarded the introduction of separate cots for infants as a matter of great importance. He had never seen a case of death from labour shock in the report before, nor had he met with a case. He had, however, seen two cases in which patients very nearly died without any hæmorrhage; ultimately, however, they pulled round, and so he could quite believe that there was such a thing as death from shock after labour. As to his cases of concealed accidental hæmorrhage, it was probable that there had been only one case in the house and Dr. Baggot's case in the extern maternity. If there was any external hæmorrhage at all it showed that the uterus had some resisting powers, and that therefore that case could not be put in the same class as internal hæmorrhage without any external escape. The latter showed absolute atrophy of the walls of the uterus, and inability to resist the pressure of blood. He did not see how plugging the vagina could save the life ot the person in such a case. He considered that Porro's operation was the less dangerous. He wondered if the increase in the mortality of *post-partum* hæmorrhage was connected with the modern method of treating the third stage of labour. It showed the care that had to be exercised in watching the uterus, as there was a risk of hæmorrhage going on which they did not either see or feel.

Sir A. V. Macan said he would like to have the dates of cases given for easy reference. In his memory the extern cases had increased from 70 to 2,254. He thought it was a great pity that they could not refer to the same standard of morbidity as the Continental hospitals. He had no doubt that there were many cases of slight concealed hæmorrhage that were never diagnosticated. In cases of *post-partum* hæmorrhage, any treatment that omitted opium as a stimulant was not quite up to modern views. It was not, he thought, possible in an annual report, such as they were considering, to enter into the details of treatment in every case.

Sir William Smyly explained that his observations as to concealed accidental hæmorrhage applied only to severe cases.

Dr. Spencer Sheill said it seemed a peculiar thing to him that a patient in a healthy condition could die of labour collapse. The three cases referred to by Dr. Tweedy bore a strong resemblance to each other in respect of causation. He did not think shock was the correct term. If the normal shock of labour acted on a patient in an unhealthy condition, it was not the shock that was the primary cause of death. He thought it would be better to put such cases down as death from unknown causes rather than under the ambiguous term of shock.

Dr. Ashe said he thought they could greatly improve their methods of giving morphin salts. There were derivatives of morphin which were not so depressing as the hydrochloride.

The Chairman said the occurrence of mammary abscess in the case of septicæmia was of great interest, as it was a rare accompaniment of the condition. In the other case of septicæmia it would occur to him that probably rupture of the uterus had taken place He found it hard to understand what circumstances in a case of hydrocephalic head could have justified version. He thought it was a pity that they had not a standard of morbidity identical with the Continental for purposes of comparison. He doubted if so much benefit had followed the discarding the use of the blunt flushing curette, and douching as was expected. He agreed with the Master of the Rotunda that pubiotomy would go a long way to rendering the induction of premature labour unfashionable; but he still thought that cases would be found for a while longer in circumstances which would justify induction.

Dr. Hastings Tweedy, in reply, said he was not responsible for the diagnosis in cases of extern maternity. The point which Dr. Jellett had made in regard to concealed accidental hæmorrhage was a particularly good one. If he stopped the hæmorrhage in the uterine arteries the child died because he stopped the blood that went to the placenta, that was an apparently weak point in the theory; but he could say that he had never yet failed to stop hæmorrhage coming through a plug in the vagina, and he had never known of hæmorrhage pouring out over the plug. He had shown over and over again that there was no blood collected in the uterus when once the vagina was plugged. The plugging of the vagina caused a considerable amount of shock to the patient through pressing on the cervical nerves, and he regretted to say that patients often did not get better, in spite of the plugging of the vagina, even though the hæmorrhage ceased; nor had he ever had a living child born after plugging the vagina in the manner recommended as treatment for accidental hæmorrhage. He thought it was understandable how the uterine arteries could be stopped, when there was a plug pressing up with a binder pressing down the uterus. He dreaded the alternative of cutting out the uterus from a woman suffering from shock. As regards details of cases, where he had glossed over a subject, it would be found that the method had been given in a former report; if the treatment had been altered in any way it would be referred to in the new report. He had been led to suppose that he had hit on an improved standard of morbidity, as it showed a high percentage when the hospital was really unhealthy and a low percentage when the hospital was in an extremely healthy state, as in the present year. He could assure the Section that there was no more regularity amongst Continental authorities than in their own country. The method standardised by the British Medical Association had the merit of being simple. As regards the cases of death from labour shock, Dr. Sheill would see that Dr. Rowlette could find nothing to account for death; and, though some other condition might have produced the shock, it was the shock that killed the patient. Sometimes the retention of the placenta gave rise to profound shock quite apart from hæmorrhage. He had therefore made it a rule that the sister should constantly take the pulse and examine the aspect of the patient while the placenta was in, and summon the Assistant-Master the moment the least change was seen, whether there was hæmorrhage or not.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At the annual meeting, held on Wednesday, October 16, Mr. Joseph Montagu Cotterill was unanimously elected President for the ensuing year. At the same meeting the following gentlemen, having passed the requisite examinations, were elected ordinary Fellows of the College:—William Rickward Bacot, M.R.C.S. Eng., London, W.; Harold Graves Bennetts, M.B., C.M., Sydney, N. S. W.; Gerald Hall Lloyd Fitzwilliam, M.B., Ch.B., Newcastle Emlyn, S. Wales; James Methuen Graham, M.B., Ch.B., Edinburgh; William Ezra Graham, M.D., C.M., Ontario, Canada; Duncan Lorimer, M.B., Ch.B., Edinburgh; Peter M'Ewan, M.B., Ch.B., Kinfauns, Perthshire; William Latto Robertson, L.R.C.S.E., M.B., Ch.B., Edinburgh; William Craig Stewart, M.B., Ch.B., Glasgow, W.; and Stanley Martin Wells, M.R.C.S. Eng., Lima, Peru, South America. John Pinkerton, M.D., &c., Honorary Physician to His Majesty the King, Gwydyr House, Crieff, Perthshire, was admitted an ordinary Fellow without examination

DIGITALIS FUCHSII (*Foxglove* v. *Foxesglew*); "*Opium of the Heart*"; "*Quinquina du Cœur.*" By JOHN KNOTT, M.A., M.D., Ch.B., and D.P.H. (Univ. Dub.); M.R.C.P.I.; M.R.I.A., &c.

OUR definite knowledge of the *foxglove* derives its date from the renaissance of botany, not from that of classic antiquity. The name *digitalis* was first—so far as we now know—applied to this plant in the sixteenth century. The inventor of the appellation was Leonard Fuchs, one of the pioneer fathers of modern scientific botany, whose name has been embalmed for all time in that of the botanical genus *Fuchsia*. It would at first sight appear—as is generally believed—to have been suggested by the crude resemblance of the flower to the finger of a glove. To a similar origin must have been due the elderly French ones of *gant de Nôtre-Dame* and *doigtier*, and the Dutch of *vingercruidt*. (Baillon gives the additional synonyms of *gantelet*, *gantelée*, *gantiller*, *gandio*, *pavée*, *pisse-lait*, *pétrole*, *petereaux*.) Of the lights of the twilight dawn of botanical science, Columna would identify *Digitalis* with the *Ephemerum* of Dioscorides; and Dalecampius (thought he) discovered its identity with the *Calathiana viola* of the elder Pliny. But there is no conclusive proof. It is of some interest to note, for purpose of correction, the mistake which is still made by the great majority of uninquiring readers—even many medical ones—that the English name of "*foxglove*" was inspired by the same resemblance which suggested the earlier of those above-mentioned. Fuchs adopted the name *digitalis* from the suggestive peculiarity of shape, corresponding to the (popular) German one of *Finger-hut* (thimble). But the English name is really an altered form of the Anglo-Saxon word *foxesglew* (*fox's music*)—an allusion to its resemblance to an antique musical instrument, which consisted of a bell attached to the end of a support curved in form of a bow. Still, I must note in passing that the monumental *New English Dictionary* does not mention this derivation. Under the head of FOXGLOVE we are there informed that "the reason for the second part of the name is obvious, as the flower resembles a finger-stall in shape; *cf.* the Latin name. Why the plant was associated with the fox is not so clear; but *cf.* Norw. *revbjelde* = 'fox-bell.'" (Was it an oversight ?) And here another singular coincidence of nomenclature presents itself which did not fail to impress the great French botanist, Baillon—who (also) does not appear to have heard of the "foxesglew." "Chose singulière, le nom allemand de ce médecin [Leonardus Fuchsius] signifie *renard* (fuchs) et, en Angleterre, la digitale porte le nom de *foxglove* ou *gant de renard*. Je me demande s'il y a là un double rencontre ou si ce nom anglais ne signifie pas plutôt *digitalis Fuchsii*, en souvenir de l'intronisateur de ce précieux médicament. J'abandonne cette discussion aux érudits, . . ." Parkinson informs us that "*Cæsalpinus* calleth it *Virga regia major flore purpureo, Alisma* also and *Damasonium*, and *Fistula pastoris*. *Tragus* calleth it *Campanula sylvestris, flore purpureo*, and *flore luteo;* . . . the *Italians* call it *Aralda* as *Camerarius* saith, . . ."

Digitalis is one of the very few powerful therapeutic agents derived from the vegetable kingdom of which no definite knowledge or quasi-scientific lore has been transmitted to us from the classic fountains of the venerable past. But its modern position is, nevertheless, one of the most firmly founded on the unshakeable rock of scientific faith and practice. And it is one of the special weapons of our therapeutic armamentarium whose properties and powers have been continuously subjected to the scrutinising cross-examination of the most penetrating clinical search-lights—of the past century and a quarter. During that period the lustre of its reputation has never been definitely tarnished, nor has its radiance grown pale in presence of its most dazzling rivals. All its alleged failings have been tested—and its attributed merits unsympathetically questioned—before the highest placed judges of the cosmopolitan tribunal of science; it has been subjected to the severest scrutiny throughout the whole length of the nineteenth century—the most scientific, the most progressive, and the most sceptical of all recorded epochs of human history. Yet it has, every time, left the court without a stain on its character. Whenever mischief had become associated with its use, the fault had not lain with the weapon, but with the (mis)guiding hand!

The genuine professional recognition of the therapeutic value of digitalis is essentially modern. Its (unrecorded) use in the older centuries—which was very probably extensive, notwithstanding the silence of the historians of medical botany—appears to have been mostly among the uneducated, and after unskilled advice. The very comprehensive John Parkinson, writing (in 1640) of the " Vertues " of digitalis as known at that date, informs his readers that: " The *Italians* have an usuall proverbe with them concerning this herbe, called by them *Aralda* which is *Aralda, tutte piaghe salda : Aralda* salveth all sores : for they use it familiarly to heale any fresh or greene wound or cut, the leaves being but bruised and bound too, and sometimes also they use the juyce in old sores to clense them, dry up their moysture, and heal them the more speedily, which it performeth by the bitter quality therein whereby it is found to be heating and drying, and clensing withall; so that whensoever there is neede of a rarefying, or extenuating of thicke tough flegme and viscous humours troubling the chest or stomacke; the decoction or juice hereof made up with some Sugar or honey is availeable, as also to clense and purge the body both upwards and downewards sometimes, of tough flegme, and clammy humours, and to open the obstructions of the Liver and Spleene; and yet notwithstanding that these qualities are found to bee in it, there are but few Physitions in our times that put it to these uses, but is in a manner wholly neglected: It hath beene found by late experience to be availeable for the King's Evill, the herb bruised and applyed to the place, or the juice made up into an ointment and used thereon: And it hath beene of later experience found also to be effectuall against the Falling sickness; that divers have beene cured thereby; for after the taking of the decoction of two handfulls thereof, with foure ounces of *Pollypody*, of the oake brusied made in Ale, they that have beene troubled with that disease 26. yeares, and have fallen once in a weeke or two or three times in a moneth, have not fallen once in 14. or 15. moneths, that is untill the writing hereof, which I thinke may be sayd to be an absolute cure, not to be presumed that after so long stay it should returne againe." So that the reputation of digitalis was then high, and we are prepared to find it allotted a place in the London Pharmacopœia of 1650.

This last therapeutic effect—of the use of a fresh decoction of digitalis leaves—does not appear to be generally known; it has, however, been recently tried with good results in some cases; and the present writer can add his own observations to the favourable testimony of others on this head.

Having taken a forward progressive stride of seventy years, we find the advances made in fox-glove therapeutics fully mirrored in the succeeding monumental Encyclopædia of British *Herbal* lore and science, that of William Salmon (1710). We are there informed, under the heading of "*The Qualities*," that "*Fox* Glove is hot and dry at least in the Second Degree, Sulphureous and Saline; Aperitive, Abstersive, Astringent, Digestive and Vulnerary: Pectoral, Hepatick and Arthritick; Emetick Cathartick and Analeptick." A goodly array of precious *qualities*, surely! If we practitioners and scientists of the twentieth century could only translate them into terms of our own coal-tar therapeutics and bacteriological pathology, how much clinically happier we would be!!

And, next, under the heading of "The *Specification*," we learn that "It Cures Consumptions, King's Evil, Green-sickness and Falling-sickness; also Wounds, old Sores and running Ulcers." "The *Preparations*" number half-a-dozen:—"1. *A Liquid Juice.* 2. *An Essence.* 3. *A Syrup.* 4. *A Decoction or Infusion.* 5. *An Ointment or Balsam.* 6. *A Cataplasm.*" Among the precious constituents of this list, the third item possessed qualities of value so transcendent that the author's account thereof is worthy of perusal—from more than one point of view.

"*The Syrup*, or *Rob of the Juice of the Herb and Flowers made with Honey.* It is a specifick which transcends all other Vegetable Medicaments for the Cure of Consumptions; cleansing and healing after an admirable manner Ulcers of the Lungs. It opens the Obstructions of all the Viscera, cleanses, carries off, or expels the recrements of the Humors, by which means the daily Nutriment may be conveyed to all Parts of the Body. It may be given Morning and Night, four or five Spoonfuls at a time, according to Age and Strength: some advise three Spoonfuls to be given in the Morning fasting in Mead, as much at Ten in the Morning, three Spoonfuls at Four in the Afternoon, and lastly, as much at going to Bed. This Medicine has restored (where the Patient has not been past Cure) beyond all Expectation. It cures a Phthisick or Ulceration of the Lungs, when all other Medicines have failed, and the Sick esteemed past Cure. It opens the Brest and Lungs, frees them from tough Flegm, cleanses the Ulcer, and heals it, when all other Remedies act without effect. I have known it do Wonders, and speak here from a long Experience. Persons in deep Consumptions, and given over by all Physicians, have by the Use of this *Syrup* or *Rob* been strangely recovered, and so perfectly restored as to grow fat again. I commend it as a

Secret, and it ought to be kept as a Treasure. These few lines concerning this Medicament alone are worth ten times the Price of the whole Book. I am very confident of it, the deplorable wasted Patient, who has been long languishing in an inveterate and tedious Consumption, or a Phthisis, if they make use hereof, will give me Thanks for this Notice, whilst they may have Reason enough to Curse even the Memories of Quacking Blood-suckers, Issue-makers, and Blister-drawers, who, as they may have possibly drained them of a fair part of their Estate and Treasures, would, by a Continuance under their Hands (for all their specious Methods of Cure), have fooll'd them out of their lives too. But here is to be noted, that this Syrup ought chiefly or only to be made of the Flowers."

"*The Virtues*" of the other *Preparations* are for the most part expansions of those catalogued under the heading of "The Specification"—already quoted. The principal divergent excursion is that regarding "*The Ointment* or *Balsam*." This, we are told, "is said to be one of the best Remedies for a scabby Head that is: it is also good against Pimples, Tettars, Ringworms, Scurff, Morphew, or other Scabbiness and Breakings out in any Part of the Body." We find that "*The Liquid Juice*" "purges and cleanses the Lungs, Stomach and Bowels; but ought to be given not in too great a quantity, because of its violent operation. It . . . works strongly both upwards and downwards, and prevails against the Scurvy, Dropsie, Jaundice, Gout, and Rhumatism; . . ."

This vision of the vigorous purgative action of digitalis appears and reappears in the clinical lucubrations of the authors of the grand old *Herbals*. It is, of course, out of keeping with our modern experience; and the only rational explanation which I have found of an apparently gross misrepresentation of physical facts is that furnished by the suggestion of the eminent French therapeutist, Fonssagrives: "je serais très-disposé, pour mon compte, à croire que, quand ils ont signalé la digitale comme susceptible d'être employée à titre d'émétocathartique, ils ont confóndu la digitale vraie avec la *gratiole* appelée *petite digitale*, plante qui fait vomir et purge en effet à la dose de 4 à 10 grammes en infusion."

The development of the modern scientific therapeusis of digitalis dates from 1775—and from the English "midland capital." It was then and there that Withering, the friend of Cullen, the famous nosologist, published his epoch-making *brochure* on this plant, which he called the *Opium of the Heart ;* on account of its sedative effects on that organ, and the consequent slowing and steadying of the pulse. He also pointed out its " hydragogue " properties. Soon after this date Solerne published the results of his experiments with digitalis on the circulation in the turkey. Schiemann, in 1786, gave to the scientific world the results of his experiments on the dog and cat. Both these observers reported slowing of the cardiac pulsations. Beddoes, in 1801, announced that digitalis produced an increase of the blood-pressure. This effect he attributed to augmentation of the contractility of the organic muscular fibres throughout the entire vascular system. In the same year, Kinglake sustained the thesis that digitalis acts simultaneously on the heart and the arteries. Curiously enough, down to this date—and even somewhat later, the sedative theory of Withering was the only one generally recognised in France; owing to the great authority of Bouillaud, by whom it had been introduced to the medical public of that country. Nevertheless, Beau, without appearing to have become acquainted with the subsequent items above referred to, and without having had recourse to physiological experimentation, had already, in testimony of the results of his own clinical observations, given to digitalis the appellation of *quinquina du cœur* (" quinine of the heart "). This view of the action of our foxglove was adopted by the celebrated cardiac authority, Bouillaud, whose emphatic opinion has in its turn been semi-diametrically criticised by Fonssangrives. " Le mot de Bouillaud : ' *La digitale n'est pas l'opium, mais bien le quinquina du cœur,*' a fait fortune ; je ferais toutefois remarquer que les termes de cette opposition n'étaient pas heureusement choisis, l'opium étant lui-même, comme je essayé de le montrer, un *cardiaque,* au sens de *stimulant du cœur* que les Anciens attribuaient à ce mot."

And now, in the opening decade of our new century, which inherits and enjoys the results and capitalised attainments of a predecessor more successfully scientific and more satisfactorily experimental than any (or all) of those that had gone before, we can claim, beyond fear of contradiction, the establishment of these three (at least) cardinal facts as unquestionable results of the ingestion of digitalis : 1. Slowing of cardiac movements. 2. Increase of contractile energy of cardiac muscle. 3. Elevation of arterial pressure. But, as would be anticipated by all readers who have had a certain amount of experience of human nature in general, and of its developments in connection with physiological investigation in particular, the multiplex theoretical explanations of these phenomena which have hitherto been advanced still continue to present very marked degrees of divergence.

Like most other plants of which the more essential constituents exert, when taken into the circulation, a very powerful influence upon the conditions and phenomena of animal life, digitalis owes its peculiar powers—for good and for evil—to the presence of certain definite chemical compounds, which can be isolated therefrom in the crystalline form. The "active principle" first obtained from this plant was, according to the usual mode of practice in the nomenclature of organic chemistry, named *digitalin* by its discoverers, MM. Homolle and Quévenne. This soon after came to be known as "amorphous" digitalin; when M. Nativelle succeeded in separating a crystalline compound, which was regarded by its discoverer as "true" digitalin—the real active principle of the amorphous digitalin. This view seemed to be corroborated by the fact that the strength of the preparations of the amorphous digitalin was hopelessly unreliable, while those of the new crystalline substance were fairly trustworthy in the uniformity of their calculated effects. But, although much more uniform in physiological power than was the amorphous, it was soon discovered that even the crystalline digitalin of Nativelle offered no reliably safe standard. The more elaborate researches of the German pharmacologist, Schmiedeberg, soon afterwards brought our knowledge of the organic chemical principles of the digitalis plant to a state of approximate accuracy. Of these, the items which have been isolated, baptised, and studied—with apparently satisfactory clearness are :—

Digitalin: a granular, if not satisfactorily crystallisable, glucoside, which possesses in a high degree the characteristic physiological powers of the maternal plant. So much so, indeed, that Kiliani and some others would name it *digitalinum verum*, and regard it as the most effective means of administering digitalis. It displays all the characteristic influence on the heart, while its effects are non-cumulative. *Digitalein:* an amorphous glucoside, or—more probably—a mixture. Its action on the heart is also non-cumulative; and it causes no local irritation when injected subcutaneously. *Digitotoxin :* regarded by some as an alkaloid—is certainly not a glucoside. This is the most active (toxic) and dangerous of all the constituents of the fox-glove plant. Its effects are cumulative—although to a degree not yet definitely measurable. *Digitonin :* a glucoside constituent, which forms the major portion of the total amount of the principles of this class which are present. It possesses an influence on the inhibitory nervous mechanism which is distinctly antagonistic to that of digitalis as a whole. *Digitin :* a crystalline principle which is physiologically inert. Homolle gave his digitalin the chemical formula $C_{20}H_{32}O_7$; Nativelle represented his own by $C_{25}H_{40}O_{15}$; Schmiedeberg calculated his at $C_5H_8O_2$. But the noon-day light of scientific certainty has not yet quite reached the formulæ of the "principles" of foxglove; so we will just allow them to pass.

We have also read of the discovery and baptism of a number of other chemical "principles" and complex compounds: *digitoresin*, *digitonéin*, *digitogenin*, and *paradigitogenin* have been "derived" from digitonin; *digitaliresin* from digitalein; and *toxiresin* from digitotoxin. We also read of *digitalose*, *digitasolin*, *digitaliretin*, *paradigitaletin*, *digitolein*, *digitalacrin*, *digitalosmin*, &c. Then comes the inevitable series of organic acids: *digitalic*, *digitaleic*, *digitalœïc*, *digitaloinic*, *antirrhinic*, &c.

Experimental observers have described three *degrees* of the effects of the administration of digitalis, according to amount of dose. And they have—respectively—made two, three, and four *periods* of their manifestation. The three degrees are: (1) Pulse slow and regular; (2) pulse quickened; (3) pulse slow and irregular. The *safely* effective therapeutic dose produces results not transcending the first of these three degrees. And in their manifestation, two time-periods are definable: (1) of physiological action; (2) of gradual return to the normal conditions. A dose somewhat larger realises three periods: (1) pulse slow; (2) pulse quickened; (3) return to the normal state. The administration of an actually toxic dose furnishes four periods: (1) pulse slow; (2) pulse quickened; (3) pulse slow and irregular—followed by a cessation more or less prolonged; (4) death, or return to the normal state. According to the eminent German authority, Schmiedeberg, the first effect of digitalis is to increase the *elasticity* of the heart—as other observers put it, the *activity of the diastole*. Hence results the "negative intraventricular pressure" which was indicated by Goltz and Gaule. This increase of elasticity produces the augmentation of the volume of the pulse which *precedes* the elevation of the blood-pressure—thus (as a superficially-seeming paradox) independently of the latter. Kaufmann studied, in succession, the action of digitalis on the heart and on the arterial system, respectively. With regard to the first, there occurs at the outset a fall in the number of beats per minute. The cause is to be found in the stimulation of the inhibitory pneumogastric nerve; at its bulbar origin, and at its cardiac terminations. It is *not* a bulbar stimulation only, as Traube thought; for after preliminary section of the vagus the slowing effect is still sometimes observable. Other theories, however, account for the effect by: increase of the arterial tension; direct action of the drug on the cardiac muscular fibres; stimulation of the vagi—connected, by reflex action, with increase of the cardiac pressure; paralysis of the accelerator nerves of the heart. This last causal hypothesis is, however, completely refuted by the fact that the period of slowing is followed by one of acceleration. The period of slowing may, moreover, be wholly absent when the dose has been sufficiently large. With regard to direct action on the muscular walls of the heart, there is one experimental fact which should be specially emphasised: the characteristic influence is manifested when the apex of the heart has been excised and placed in a solution of digitalin. As the intracardiac motor ganglia are situated towards the basal segment of the organ, this experiment goes towards proving—as conclusively as physiological data well can—that the specific influence of this substance is exerted *directly* on the *muscle fibres.*

The pulse may become dicrotic, or tricrotic, with corresponding movements of the heart. With fatally toxic doses, the heart-stops—tetanically—in systole; the final contraction commencing at the apex. The auricles continue to beat for some time after the ventricles have become quiescent. It should be added, however, that these distinctive cardiac phenomena—very obvious in the frog—are not clearly marked in the mammal.

Next in importance to its influence on the cardio-vascular system, is, of course, that on the renal secretion. And it is—at this date—a matter of curious, even painfully amusing, interest to note the vast series of contradictory statements and opinions (with the explanations and elucidations thereof) which formerly inundated the literature of clinical therapeutics and experimental physiology on this divisional topic alone. The famous poetphysician, Erasmus Darwin, was a contemporary pioneer of Withering in foxglove therapeutics; and these two physicians were the actual founders of the renal reputation of this potent drug. The great authority of Cullen—of *Nosology* and *First Lines* fame—was added; and, in the early years of the nineteenth century, that of Bidault de Villiers (*Essai sur les propriétés médicinales de la digitale:* Paris, 8 Fructidor, An XII.) who constituted himself the original herald of the clinical reputation of digitalis to the profession in France. But, startling to state, we have in the following generation a series of "authorities" denying the diuretic powers attributed to this agent: Germain, Durosiez, Royle (*Manual of Materia Medica and Therapeutics*), &c., &c. And between those two antagonistic camps was actually arranged a moderate one of "liberal unionists" (Hirtz, Kluyskens, Vassal), who defended the compound thesis that digitalis exerted no diuretic power in the healthy subject; but did in disease—indirectly, by removing the pathological cause of the scantiness of the renal secretion. In an article on the subject (*Nouveau Dict. de Méd. et de Chir. prat.*, 1872) which, generally speaking, displays great subtlety of thought as well as wide range of attainment, Hirtz states that "Elle n'est diurétique que dans certains états pathologiques, dans ceux où la circulation générale est entravée. En régularisant le cours du sang dans les différentes parties et en particulier dans le rein, elle amène le fonctionnement régulier de cet organe et par conséquent une augmentation dans la sécrétion, tandis qu' à l'état physiologique et dans les maladies où la circulation n'est pas en jeu, elle perd toute propriété diuretique." The usual ingenuity of scientific obstinacy!—still more curiously scintillating is the affirmation of Kluyskens, that digitalis displayed an elective action in the elimination of the fluid of *hydrothorax!*

The cardiac position of foxglove therapeusis is now, of course, so conspicuously placed as to be familiar to all practitioners. There remains, inevitably, a marginal borderland territory, still sacred to clinical and scientific disputation. Trousseau was—as might be expected—one of the earliest experimenters with this remedy in "l'effroyable éréthisme de l'arbre circulatoire" which characterises *Graves's disease,* and does not appear to have been very well satisfied with the result. The tonic contraction of the muscular walls of the arterioles was an attributed effect to which was owing its employment in *hæmoptysis* and other hæmorrhages of that class—as in the treatment of *metrorrhagia* by Howship Dickinson (of Dublin). Its special sedative action on the whole circulation, and the organs thereof, led to its employment in *inflammatory conditions*—by Clutterbuck, and Hosack, and (on a very large scale, indeed) by Rasori of Milan, who proposed to substitute its employment for venesection. From the same source came the inspiration of its *antipyretic* uses; in *rheumatic fever*, in *typhoid fever*, in *acute tuberculosis*, and in *pneumonia*. Traube reported its successful employment in *puerperal fever*. All readers are, of course, familiar with the accidental discovery of its efficacy in *delirium tremens* by Jones, of Jersey; fewer, perhaps, with its (especially French) reputation as an *anaphrodisiac* and *antiblennorrhagic* agent. Duclos resuscitated the old treatment of *epilepsy* with digitalis—professing to regard the syndrome as often symptomatic of scrofulous disease, and digitalis as an *anti-scrofulous* agent. Kluyskens thought that it would prove efficacious in epilepsy which was symptomatic of serous effusion in the brain or its cavities. But, in the case of a remedy possessed of powers so pronounced and so peculiar as those of digitalis, if all that it has done, or can do, or was said to be capable of doing, or was employed for the purpose of—or in the hope of—doing, were written down: why, even the κόσμος itself would prove too narrow!

Its cardiac powers are, and pretty surely will for all future scientific clinical practice continue to be, those principally utilised. Deficiency of valvular competency, with insufficient compensatory hypertrophy: such condition will always be the great indication. And even in *aortic incompetency*—the approximately unique valvular herald of *sudden death*—the drug is often employed (of course, with observant care, and in specially small doses) when the compensatory hypertrophic *vis à tergo* is markedly deficient. Further detail of opinion or advice on the use of this very important therapeutic agent may be sought for, with confidence, in the monumental text-book of Sir Lauder Brunton, whose professional skill is as convincingly demonstrated in the pages of his writings as was his scientific zeal in the carrying out of the elaborate (and dangerous) experiments which his enthusiastic pursuit of knowledge led him to make on his own person with this same digitalis, its preparations and its active principles.

The peculiar, and practically important, *cumulative* property of digitalis is, of course (as in the case of aconite), dependent on the slowness of its elimination from the system.

A few words, in conclusion, on the toxic symptoms produced by an overdose of foxglove—or its active principles. They have seldom been so concisely and so graphically arranged as in the sentence formulated by Murray in 1793: ***Excitat nauseam, vomitum, alvique purgationem, vertiginem, oculorum caliginem, lotii uberiorem secretionem, sudores frigidos, deliquia animi, anxietatem vehementem, cardialgiam, singultum, convulsiones, et ipsam aliquando mortem.*** One of the special facts to be noted in connection with the toxicity of digitalis is that, notwithstanding the very great potency of the drug, but a comparatively small proportion of the (more than possibly) lethal doses have been followed by a fatal issue. This peculiarity is largely due to the vomiting which is so prone to occur ***soon***; while the characteristic ***cardio-vascular*** effects are often comparatively very ***late*** in course of development. The vomiting produced by digitalis is also distinctively violent in its movements, and pertinacious in its recurrence, as Sir Lauder Brunton found in his own (personal) experience. The tracing of this poison in fatal—or otherwise questionable—cases has certainly not been, up to the present, satisfactorily simplified by our most advanced chemical and physical knowledge. In this respect, the position of ***digitalin*** is almost startlingly similar to that of ***aconitin.*** This is a somewhat curious coincidence—affecting two drugs of unrivalled potency, in directions—clinically speaking—almost diametrically opposite. And the similarity is still more curiously punctuated in the report of the single case of digitalin poisoning which, so far as I know, has been followed by the conviction and execution of the poisoner—that of Dame de Pauw. Drs. Roussin and (the celebrated medico-legist) Tardieu, were the experts of the inquest. The body was exhumed thirteen days after death. The most careful search for mineral poisons gave wholly negative results. But suspicions were aroused by the discovery of digitalin in the possession of the accused, whose mistress the deceased woman had been. The latter had been in good health the day before her death. No natural cause ot a sudden termination of life was revealed by the ***post-mortem*** examination. On these (and various corroborative circumstantial) grounds of suspicion MM. Tardieu and Roussin drew up a series of ***conclusions***, eight in number—beginning with:

1. La veuve de Pauw est morte empoisonnée;
2. La poison qui la tuée est de la nature de ceux qui, empruntés

au règne végétal, peuvent ne pas laisser de traces caractéristiques dans les organes, ne pas être isolés par l'analyse chimique, mais que révèlent leur présence par leurs effets et sont décelés par l'action meurtrière qu'ils exercent sur les corps vivants.

3. Nous avons retiré non-seulement des matières vomies par le veuve de Pauw sur la parquet de la chambre, mais aussi des organs soumis à l'analyse un principe toxique très-énergique, qui, expérimenté sur les animaux, a produit des effets analogues à ceux qu' à ressentis la veuve de Pauw, et les a fait périr de la même manière ;

4. Ces effets et cette action ont une grande ressemblance avec ceux de la digitaline, et sans toutefois que nous puissions l'affirmer, de fortes présomptions nous portent à croire que c'est à un empoisonnement par la digitaline qu'a succombé la veuve de Pauw ;

5. . . .

Inquiring readers will probably take some interest in comparing these "conclusions" with those of Dr. Geoghegan, in the case of the first medico-legal investigation of aconite poisoning; which I took a recent opportunity of re-introducing to the notice of readers of the DUBLIN MEDICAL JOURNAL. And they can hardly help recognising the similarity of the conclusions. But I would ask them, at the same time, to bear in mind the incomparably smaller group of data which guided the almost inspired reasoning of our illustrious fellow-countryman.

IONIUM.

PROFESSOR B. B. BOLTWOOD, of Yale University, reports in the last issue of the *American Journal of Science* his discovery of a new radio-active element, which he has named ionium. He says, in part, "strong evidence has therefore been obtained of the existence in the uranium minerals of a new radio-active element, which emits both alpha and beta radiations, which produces no emanation, and which resembles thorium in its chemical properties. It is without doubt a disintegration product of uranium, and is in all probability the immediate parent of radium. The name 'ionium' is proposed for this new substance, a name derived from the word 'ion.' This name is believed to be appropriate, because of the ionising action which it possesses in common with the other elements which emit alpha radiums. Further experiments are in progress, which it is hoped will afford additional information as to the properties and chemical behaviour of this new body."—*New York Medical Journal,* October 5, 1907.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by Sir John Moore.

Vital Statistics

For four weeks ending Saturday, October 5, 1907.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending October 5, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 19.6 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, October 5, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality:—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c	Week ending				Average Rate for 4 weeks
	Sept. 14	Sept. 21	Sept. 28	Oct. 5			Sept. 14	Sept. 21	Sept. 28	Oct. 5	
22 Town Districts	17.1	16.1	18.1	19.6	17.7	**Lisburn**	9.1	9.1	9.1	13.6	10.2
Armagh	13.7	—	34.4	—	12.0	**Londonderry**	17.2	11.0	17.2	9.8	13.8
Ballymena	19.2	14.4	19.2	19.2	18.0	**Lurgan**	31.0	22.1	22.1	—	18.8
Belfast	17.6	15.6	16.5	17.7	16.9	**Newry**	4.2	4.2	33.6	16.8	14.7
Clonmel	15.4	15.4	5.1	5.1	10.3	**Newtownards**	11.4	17.2	22.9	5.7	14.3
Cork	22.6	17.1	21.2	26.0	21.7	**Portadown**	5.2	15.5	—	20.7	10.4
Drogheda	12.3	4.1	16.3	4.1	9.2	**Queenstown**	19.8	13.2	33.0	26.4	23.1
Dublin (Reg. Area)	17.6	18.6	18.6	21.0	18.9	**Sligo**	14.4	19.2	9.6	52.8	24.0
Dundalk	8.0	19.9	19.9	16.0	16.0	**Tralee**	10.6	31.7	15.9	21.1	19.8
Galway	15.5	3.9	23.3	38.8	20.4	**Waterford**	17.5	11.7	23.4	44.8	24.3
Kilkenny	19.7	19.7	9.8	9.8	14.8	**Wexford**	18.7	—	18.7	18.7	14.0
Limerick	8.2	16.4	21.9	15.0	15.4						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, October 5, 1907, were equal to an annual rate of 3.1 per 1,000—the rates varying from 0.0 in thirteen of the districts to 26.4 in Queenstown, in which district all of the 4 deaths registered were from diarrhœal diseases. The 126 deaths from all causes in Belfast include 2 from measles, one from whooping-cough, 2 from diphtheria, one each from *pyrexia* (origin uncertain) and enteric fever, 16 from diarrhœal diseases, and 2 from cerebro-spinal fever. The 38 deaths from all causes in Cork include one from enteric fever and 8 from diarrhœal diseases. Of the 23 deaths from all causes in Waterford 7 are from diarrhœal diseases. Among the 10 deaths from all causes in Galway there was one each from diphtheria and *pyrexia* (origin uncertain). The 11 deaths from all causes in Sligo include one from enteric fever; and 2 deaths from diarrhœal diseases were included in the 4 deaths from all causes in Portadown.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, October 5, 1907, amounted to 184—101 boys and 83 girls; and the deaths to 161—75 males and 86 females.

DEATHS.

The deaths registered represent an annual rate of mortality of 21.5 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the Area, the rate was 21.0 per 1,000. During the forty weeks ending with Saturday, October 5, the death-rate averaged 24.7, and was 0.5 below the mean rate for the corresponding portions of the ten years, 1897–1906.

Included in the deaths registered during the week ended Saturday, October 5, were 3 from whooping-cough, 3 from diphtheria, and 12 from diarrhœal diseases. In each of the

3 preceding weeks, deaths from whooping-cough were one, one, and one; deaths from diphtheria were 2, 2, and one; and deaths from diarrhœal diseases were 9, 10, and 17. One death was attributed to influenza.

The deaths from pneumonia (all forms) comprised one death from lobar pneumonia, 2 deaths from broncho-pneumonia, and 3 deaths from *pneumonia* (not defined).

Of 43 deaths from all forms of tuberculous disease, 13 were from tubercular phthisis, 19 were returned as from *phthisis*, 5 were from tubercular meningitis, and 6 were from other forms of the disease. In each of the 3 preceding weeks, the deaths from all forms of tuberculous disease numbered 24, 33, and 33.

The deaths from malignant diseases included 8 from carcinoma, one from sarcoma, and 3 from cancer, malignant disease (undefined).

The deaths of 2 infants were caused by prematurity.

Of 11 deaths from diseases of the brain or nervous system, 4 were from *convulsions*, all of infants under one year of age.

There were 21 deaths from diseases of the heart or blood vessels, and there were 6 deaths from bronchitis.

Of 3 accidental deaths, 2 were caused by drowning.

In 7 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 5 infants under one year old and the death of a person aged 62 years.

Forty-six of the persons whose deaths were registered during the week in question were under 5 years of age (28 being infants under one year, of which 9 were under one month old), and 39 were aged 60 years and upwards, including 21 persons aged 70 and upwards, of whom 2 were octogenarians. One (a male) was stated to have been aged 92 years.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. R. A. O'Donovan, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended October 5, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable n the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	Sept. 14	-	*	*	6	1	-	7	-	4	6	5	-	*	*	*	29
	Sept. 21	-	*	*	2	3	-	5	-	2	12	13	-	*	*	*	37
	Sept. 28	-	*	*	4	5	-	8	-	4	10	14	-	*	*	*	45
	Oct. 5	-	*	*	5	1	-	6	-	3	8	9	-	*	*	*	32
Rathmines and Rathgar Urban District	Sept. 14	-	*	*	-	-	-	2	-	-	-	-	-	*	*	*	2
	Sept. 21	-	*	*	-	-	-	2	-	-	-	1	-	*	*	*	3
	Sept. 28	-	*	*	-	-	-	-	-	-	-	1	-	*	*	*	1
	Oct. 5	-	*	*	-	-	-	1	-	-	1	-	-	*	*	*	2
Pembroke Urban District	Sept. 14	-	7	-	-	-	-	1	-	1	2	-	-	*	-	-	11
	Sept. 21	-	8	-	1	-	-	-	-	-	4	-	-	*	2	-	15
	Sept. 28	-	3	-	-	-	-	-	-	-	-	-	-	*	-	-	3
	Oct. 5	-	1	1	-	-	-	-	-	-	-	-	-	*	1	-	3
Blackrock Urban District	Sept. 14	-	*	*	1	-	-	-	-	-	-	-	-	*	*	-	1
	Sept. 21	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Sept. 28	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Oct. 5	-	*	*	1	-	-	-	-	-	-	-	-	*	*	-	1
Kingstown Urban District	Sept. 14	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Sept. 21	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Sept. 28	-	*	*	-	-	-	1	-	-	-	-	-	*	*	*	1
	Oct. 5	-	*	*	-	-	-	-	-	-	1	-	-	*	*	*	1
City of Belfast	Sept. 14	-	*	*	3	-	-	5	-	11	8	6	-	*	*	3	36
	Sept. 21	-	*	*	10	-	-	4	-	7	2	9	2	*	*	4	38
	Sept. 28	-	*	*	8	-	-	6	2	3	2	5	-	*	*	2	28
	Oct. 5	-	*	*	7	-	-	7	2	2	8	4	1	*	*	3	34

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended October 5, 1907, 6 cases of measles were admitted into hospital, 2 were discharged, there was one death, and 20 cases remained under treatment at its close.

Eight cases of scarlet fever were admitted to hospital, 7 were discharged, and 36 cases remained under treatment at the close of the week. This number is exclusive of 10 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was discharged from hospital, one case was admitted, and 6 cases remained under treatment at the close of the week.

Thirteen cases of diphtheria were admitted to hospital, 5 were discharged, there was one death, and 23 patients remained under treatment at the close of the week.

Eight cases of enteric fever were admitted to hospital, 3 were discharged, and 41 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 3 cases of pneumonia were admitted to hospital, 8 were discharged, and 26 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, October 5, in 76 large English towns, including London (in which the rate was 13.3), was equal to an average annual death-rate of 14.8 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 13.2 per 1,000, the rate for Glasgow being 15.0 and for Edinburgh 13.0

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended October 5. From this Report it appears that of a total of 54 cases notified 27 were of scarlet fever, 10 of diphtheria, 3 of enteric fever, and 3 of erysipelas. Among the 295 cases of infectious diseases in hospital at the close of the week were 122 cases of scarlet fever, 38 of whooping-cough, 28 of measles, 30 of diphtheria, 14 of enteric fever, and 8 of erysipelas.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of September,* 1907.

Mean Height of Barometer, - - -	30.091 inches.
Maximal Height of Barometer (18th, at 9 a.m.),	30.472 ,,
Minimal Height of Barometer (2nd, at 11 15 a.m.	29.486 ,,
Mean Dry-bulb Temperature, - - -	56.8°.
Mean Wet-bulb Temperature, - - -	54.7°.
Mean Dew-point Temperature, - -	52.8°.
Mean Elastic Force (Tension) of Aqueous Vapour	.403 inch.
Mean Humidity, - - - - -	87.2 per cent.
Highest Temperature in Shade (on 10th), -	71.2°.
Lowest Temperature in Shade (on 4th), -	38.7°.
Lowest Temperature on Grass (Radiation) (4th),	34.5°.
Mean Amount of Cloud, - - -	56.7 per cent.
Rainfall (on 7 days), - - - -	.552 inch.
Greatest Daily Rainfall (on 3rd), - -	.260 ,,
General Directions of Wind, - -	N.E., E.S.E., W.

Remarks.

September, 1907, opened with as cold a spell as has been observed at this season for very many years, but on the 5th there was a sudden rise of temperature, and the remainder of the month was warm, fine, and tranquil, like the Septembers of 1865, 1898, and 1906. In the wake of a baric depression, which was central near Malin Head on the morning of the 2nd and afterwards travelled north-eastwards to Norway, fresh N.W. winds brought clouds, showers, and low temperature. On the 3rd the thermometer in Dublin ranged from 42.3° to 52.5°, and the mean was 47.4°. On September 2, 1906, the thermometer rose from a minimum of 58.9° to a maximum of 77.8°. The mean of that hot September day was 68.4°, or 21° above that of the cold September 3 of 1907. In the unsettled first week the dominant wind was S.W., and rain fell on 5 days to the amount of .514 inch. During the rest of the month there were only 2 "rain days," and the measurement was only .038 inch. The fine autumnal weather was due to the existence over the British Isles, France and Germany of an anticyclone of unusual staying power and immobility.

In Dublin the arithmetical mean temperature (57.8°) was 1.9° above the average (55.9°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 56.8°. In the forty-three years ending with 1907, September was coldest in 1886 and 1892 (M. T. = 53.0°), and warmest in 1865 (M. T. = 61.4°) and 1898 (M. T. = 60.2°). In 1906 the M. T. was 57.1°.

The mean height of the barometer was 30.091 inches, or 0.181 inch above the corrected average value for September—namely, 29.910 inches. The mercury rose to 30.472 inches at 9 a.m. of the 18th, having fallen to 29.486 inches at 11 15 a.m. of the 2nd. The observed range of atmospheric pressure was, therefore, .986 inch.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 56.8°, or only 1.0° below the value for August, 1907. Using the formula, *Mean Temp.* = *Min.* + (*Max.*—*Min.* × .476), the mean temperature was 57.5°, or 1.8° above the average mean temperature for September, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (55.7°). The arithmetical mean of the maximal and minimal readings was 57.8°, compared with a thirty-five years' average of 55.9°. On the 10th the thermometer in the screen rose to 71.2°—wind, S.E.; on the 4th the temperature fell to 38.7°—wind, N.W. The minimum on the grass was 34.5° on the 4th.

The rainfall was .552 inch on 7 days. The average rainfall for September in the thirty-five years, 1871–1905, inclusive, was 2.210 inches, and the average number of rainy days was 15. In 1871 the rainfall was very large—4.048 inches on, however, only 13 days; in 1896 no less than 5.073 inches fell on 23 days, establishing a record rainfall for September. On the other hand, in 1865, only .056 inch was measured on but 3 days. In 1906. .696 inch fell on 7 days.

High winds were noted on only 2 days, and never attained the force of a gale. The atmosphere was foggy on the 3rd, 7th, 8th, 18th, 20th, 21st, 22nd, and 30th. A solar halo was observed on the 8th. Lightning was seen on the 10th.

The rainfall in Dublin during the nine months ending September 30th amounted to 17.140 inches on 153 days, compared with 16.121 inches on 146 days in 1906, 19.266 inches on 145 days in 1905, 19.147 inches on 152 days in 1904, 25.269 inches on 174 days in 1903, 21.425 inches on 149 days in 1902, 18.070 inches on 124 days in 1901, only 10.968 inches on 112 days in 1887, and a thirty-five years' average of 20.160 inches on 146 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. J. E. W. Flood, Sch., reports that the mean height of the barometer was 30.093 inches. The range of atmospheric pressure was from 29.506 inches at 9 a.m. of the 2nd to 30.473 inches at 9 a.m. of the 18th. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 57.5°. The arithmetical mean of the daily maximal and minimal temperatures was 57.8°. The screened thermometers rose to 72.8° on the 10th, and fell to 39.1° on the 4th. On the latter date the grass minimum was 31.1° On the 7th the black bulb *in vacuo* rose to 124.9°. Rain fell on 6 days to the amount of .454 inch, the greatest fall in 24 hours being .223 inch on the 3rd. The duration of bright sunshine, according to the Campbell-Stokes recorder, was 98.2 hours, of which 9.1 hours occurred on the 10th. The mean earth temperatures were—at 1 ft., 57.3°; at 4 ft., 56.3°. The one-foot thermometer ranged from 59.4° on the 11th to 53.6° on the 4th. The four-feet thermometer ranged from 56.9° on the 1st, 3rd, and 7th, to 55.9° on the 8th.

Dr. Francis P. Leyland reports that at the Royal National Hospital for Consumption, Newcastle, Co. Wicklow, the rainfall was .939 inch on 8 days, the maximal daily fall was .350 inch on the 3rd. On the 4th also .322 inch fell. The thermometer in the shade rose to 68.4° on the 9th and fell to 38.2° on the 4th. The mean temperature was 57.6°. Up to September 30 the rainfall of 1907 has amounted to 20.432 inches on 145 days.

Mr. Robert O'Brien Furlong, C.B., reports that the rainfall at Cloneevin, Killiney, Co. Dublin, was only .52 inch on 7 days, the maximum being .27 inch on the 3rd. The average September rainfall at this station in 22 years (1885–1906) was 2.00 inches on 13 days. Partial drought prevailed from the 4th to the 30th, only .17 inch of rain having fallen. Between the 5th and 30th inclusive, only .05 inch fell. Up to the 30th, from January 1st, 16.32 inches of rain had fallen on 138 days. In 1906, the September rainfall was only .34 inch on 6 days.

Mr. R. Cathcart Dobbs, J.P., reports that at Knockdolian, Greystones, Co. Wicklow, the rainfall was .900 inch on 7 days, compared with .338 inch on 6 days in 1906, 1.055 inches on 10 days in 1905, 2.880 inches on 12 days in 1904, 3.950 inches on 20 days in 1903, 3.995 inches on 12 days in 1902, and 5.420 inches on 19 days in 1901. The heaviest fall in 24 hours was .300 inch on the 3rd. At Knockdolian the rainfall since January 1st, 1907, has been 19.465 inches on 129 days, compared with 15.793 inches on 105 days in 1906, 22.113 inches on 120 days in 1905, 21.457 inches on 141 days in 1904, 27.050 inches on 154 days in 1903, 27.156 inches on 123 days in 1902, and 25.105 inches on 119 days in 1901.

At Clonsilla, Greystones, Dr. Arthur G. Price recorded a rainfall of .85 inch on 7 days. The greatest rainfall in 24 hours was .30 inch on the 3rd. Temperature was highest (70°) on the 5th and 6th, lowest (36°) on the 3rd. The mean temperature was 56°.

Dr. Arthur S. Goff returns the rainfall at Lynton, Dundrum, Co. Dublin, at .67 inch on 8 days, compared with 5.03 inches on 18 days in 1901, 4.09 inches on 19 days in 1902, 4.33 inches on 21 days in 1903, 2.94 inches on 19 days in 1904, 1.07 inches on 15 days in 1905, and .62 inch on 8 days in 1906. The greatest daily fall was .34 inch on the 3rd. The mean temperature in the shade was 58.2°, compared with 55.3° in 1903, 56.2° in 1904, 54.9° in 1905, and 57.6° in 1906. The screened thermometers rose to 70° on the 9th and 10th, and fell to 40° on the 4th.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was .602 inch on 7 days, the greatest fall in 24 hours being .205 inch on the 2nd. The mean shade temperature was 56.9°, the extremes being—highest, 71° on the 12th; lowest, 35° on the 3rd. In September, 1906, the rainfall was .681 inch on 9 days.

At 21 Leeson Park, Dublin, Dr. Christopher Joynt, F.R.C.P.I., registered .567 inch of rain on 8 days, the greatest fall in 24 hours being .275 inch on the 3rd.

The Rev. Arthur Wilson, M.A., returns the rainfall at the Rectory, Dunmanway, Co. Cork, at 2.36 inches on 9 days, the heaviest fall in 24 hours being .83 inch on the 25th. No rain fell from the 10th to the 24th, and only .03 inch from the 6th to the 24th.

Mr. Wm. Miller states that in the City of Cork the rainfall was 2.22 inches on 9 days, or 0.46 inch below the average for September. The rainfall was greatest on the 26th, when 1.22

inches was measured. In the 9 months ended September 30, the rainfall was 21.56 inches, or 5.23 inches less than the average.

Miss Muriel E. O'Sullivan reports that at Whitecross, Stillorgan, Co. Dublin, the rainfall was 1.071 inches on 9 days, of which amount .395 inch was measured on the 3rd.

The rainfall recorded at the Ordnance Survey Office, Phœnix Park, was only .459 inch on 7 days, the greatest measurement in 24 hours being .200 inch on the 3rd. The total amount of sunshine at this station was 105.4 hours, the most registered on any one day being 9.8 hours on the 21st.

PERISCOPE.

THE DIFFUSION OF BACTERIA THROUGH THE WALLS OF THE INTESTINES.

KARL VON KLECKĒ (*Wiener klinische Wochenschrift*, September 12, 1907) reports the experiments conducted in the pathological laboratory of the university at Cracow under his supervision by K. Rogozinski, which prove that there is normally a permanent resorption of bacteria from the intestines by the mesenteric glands of animals, especially microbes belonging to the family of *Bacterium coli*. Wrzosek conducted experiments on forty-seven animals and birds (guinea-pigs, dogs, rabbits, cats, and pigeons). The microbes were introduced into the intestinal canals, and were demonstrated in the mesenteric glands, the liver, spleen, kidneys, the bronchial glands, lungs, muscles, and marrow. The microbes were such as do not usually exist in the air, *Bacillus prodigiosus*, *Bacterium kiliense*, *Bacillus vidaceus*, and *Bacillus pyocyaneus*. The author is of the opinion that the microbes are carried into the blood circulation by way of the chylous vessels through the thoracic duct.—*New York Medical Journal*, October 5, 1907.

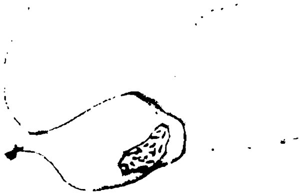
THE NEW RADIO-ACTIVE COMPOUND.

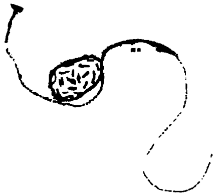
IN the July issue of the *Bulletin des Sciences Pharmacologiques*, Mons. André Lancien gives particulars of uranium molybdate, the new radio-active compound referred to in our last issue. It has the formula MoO_4UO_2, and is formed by mixing solutions of ammonium molybdate and uranium nitrate. The precipitate has to be carefully collected and dried in the dark, and when so prepared is a white amorphous powder, becoming golden-yellow on exposure to light. It is soluble in strong acids, the solutions having a greenish-yellow fluorescence. Acetic acid and alcohol convert it into green uranous molybdate. Comparative experiments showed its radio-activity to be equal to radium-barium bromide of " 40 " power, both as regards its action on a photographic plate and its physiological effects on rabbits, while it does not blister the skin like the latter substance. The yellow powder, formed by exposure to light, has a very feeble radio-activity, while heat deprives the substance entirely of this property. While not equal to pure radium bromide in power, the author considers that its comparative cheapness will allow of a larger quantity being used, and hopes that it may thus supplant the latter compound.—*The Prescriber*, Vol. I., No. 12, Edinburgh, September, 1907.

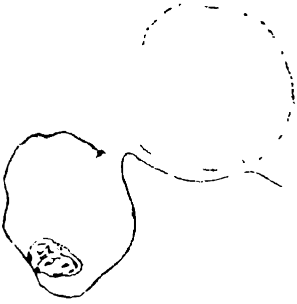
SOME POINTS IN INFANTILE TUBERCULOSIS.

DR. L. E. HOLT (*Archives of Pædiatrics*, September, 1907) thinks that this condition in infants has not been sought with sufficient thoroughness. It is a very common disease in infants, as has been proved by systematic search for bacilli in children who have been exposed to infection, and by the tuberculin test. Of sixty-seven cases which came under the author's observation, the diagnosis was determined by the bacilli in the sputum in fifty-four, by *post-mortem* findings in ten, by bacilli in the spinal fluid in one (tubercular meningitis), by reaction to tuberculin in one, and by typical clinical symptoms in one. All but five of these patients were under two years of age. The method of obtaining the mucus for examination consisted in irritating the pharynx with a spoon or tongue depressor, and catching the sputum coughed up upon a bit of gauze or muslin. Direct contagion was the cause of the disease in a very large number of the cases. The intestinal lesions were infrequent and insignificant, showing that the intestinal tract is not very vulnerable to tuberculosis in early life. The value of the spinal fluid for diagnostic purpose is shown in the fact that in all of forty-two cases of tubercular meningitis, in which lumbar puncture was made, bacilli were found. The bacilli were the more abundant in the fluid removed at a late period of the disease. The cells found in the cerebro-spinal fluid were few, and usually mononuclear. It is recommended that the bacilli should be sought in every case of tubercular meningitis, whether pulmonary symptoms are present or not.—*New York Medical Journal*, October 5, 1907.

Prof. Mettam—"On the Presence of a Trypanosome in an Irish Bat."







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DECEMBER 2, 1907.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XV.—*On the Presence of a Trypanosome in an Irish Bat.* By A. E. METTAM, B.Sc., M.R.C.V.S., M.R.I.A.; Principal, Royal Veterinary College, Dublin. [Illus.]

A SMALL bat, *Vesperugo pipistrellus*, was discovered flittering about on the lawn behind my house in a dull and seemingly non-purposive fashion. It was mid-day of July 7th of the present year, and the sun was bright and hot. The bat finally alighted upon a high wall, and was secured. It was found to be injured. There was a wound through the skin of the abdominal wall, which was bleeding. Smears were made, and dried rapidly in the air; later fixed by methylic alcohol and stained by Giemsa's solution.

Examination of the films revealed the presence of a small trypanosome. The parasites were not numerous. The trypanosome is smaller than the *T. lewisi*, and the majority of the organisms were much curved, and had evidently been fixed suddenly during their rapid movements. I estimate the entire length of the parasite to be less than 20 μ (18–19 μ). The flagellum is not longer than the body of the parasite, and can be readily traced, as in other trypanosomes, as commencing in the centrosome at the posterior end of the parasite. The centrosome, about 0.8 μ in diameter, appears to vary in shape. Sometimes it is a small circular body, or an irregular triangle with rounded angles, or a plano-convex lens, the plane surface being towards the nucleus. The nucleus is oval, and measures 3.5 μ along its greater diameter; the chromatin is granular and stains purple, the granules being somewhat elongated and numerous. The undulating membrane is distinct. The posterior extremity of the parasite is pointed; the body stains bluish, with lighter irregular-sized roundish areas quite light or unstained. The red blood corpuscles of the pipistrelle have a transverse measurement of from 6 to 7 μ.

Examined in fresh condition, the parasite moves rapidly in the usual manner, coiling and uncoiling and lashing the flagellum wildly too and fro. It does not appear to be so active as the trypanosome of N'gana nor that of the rat, and there was little difficulty in observing the different parts of the parasite in the living state with a 2 mm. apochromatic oil immersion lens. I am not able to say if the parasite is pathogenic, nor am I able to say if it resembles one or other of the trypanosomes described by the Messrs. Sergent in the *Vespertilio kuhli* captured in Tunis. I did not observe any spirochætes, such as those described by Nicolle and Compte as present in the same species—young animals also captured in Tunis. Dionisi found trypanosomes in a bat in Italy—*Mincopterus schreibersii*, and the trypanosomes are present in animals also harbouring parasites in the red blood corpuscles. Testi and Sambon have also seen them in Italian bats. Durham records their presence in small bats of the genus *Phyllostoma* of Brazil; and Donovan has seen them in the large fruit-eating bat of the country around Madras—the *Pteropus medius*. Battaglis observed trypanosomes in the *Vespertilio noctula* in Italy, two out of six examined; Petrie, at Elstree in Herts, found them in the *Pipistrellus pipistrellus*, three out of eight; Kisskalt, at Giessen in Germany, out of forty specimens of *Vesperugo pipistrellus*, found trypanosomes in five. Bettencourt and França, examining the bats in Portugal, found the parasites in *Vesperugo pipistrellus*, two infected of nine; *Vesperugo serotinus*, one of four; and in *Vespertilio nattereri*, three of fourteen examined.

The trypanosomes observed in the Tunisian bats appear to be non-pathogenic to bats, and inoculations made into rats, mice, guinea pigs, and rabbits were fruitless. Nicolle and Compte succeeded only once in infecting healthy bats out of twenty experimental inoculations. In my hands four white mice inoculated with the blood of the *Vesperugo pipistrellus*, containing the trypanosome described above, remained uninfected.

I have to thank Mr. D. Kehoe, veterinary student, for the illustrations, which are drawn to scale.

ART. XVI.—*Functional Spastic Paraplegia.*[a] By JAMES CRAIG, M.D. Univ. Dub.; Fellow and Registrar, Royal College of Physicians of Ireland; Physician to the Meath Hospital and County Dublin Infirmary.

CASE [exhibited].—A coachman, aged twenty-three, had been admitted to the Meath Hospital in March, 1906, complaining of pain, coldness, and a dead feeling in his left leg. He attributed his condition to a wetting, received a year before, when he wore a broken boot. A sensation of "pins and needles" in his left foot and leg followed. Subsequently cold sweats occurred in the leg accompanied by pain which passed up his side into his left arm. Later the pain again attacked and settled in the calf of his left leg, while from the hip down the limb was cold and numb. Tremors then appeared in the leg, so that on attempting to walk he staggered like a drunken man; spasm of the muscles in the leg and extension of the tremors to the other leg and to the arms followed. Examination revealed increased knee jerks, some attempt at ankle clonus in the left leg, slight nystagmoid movements of the eyeballs, no slurring of speech, rhythmical tremors appear in the limbs on using them. He was thought to have disseminated sclerosis, and left hospital in about six weeks without any change in his condition. He weighed 10st. 2lbs. on leaving hospital in April, 1906.

He came into hospital again about a month ago, this time under my care. He now attributes the onset of his illness to his having slept on a mattress on a stable floor while nursing a sick horse. He says his legs and left arm are weak, and that he has shooting pains which run up his legs, along his sides, across his chest and down again. In the left arm he has shooting pains which escape by the tips of his fingers. He is now only 8st. 7lbs., and appears to be wasted, but the wasting is quite general; he is unable to stand with his eyes closed, and staggers considerably when walking; knee jerks are increased; there is no ankle clonus, but on the left side a few spasms of rectus clonus are elicited which give him pain. There is a flexor plantar reflex. Hyperæsthesia to touch, pain and heat is universal. He has a fairly coarse tremor, seen well in his arm when he places a forefinger on the tip of his nose. He has very slight nystagmoid twitches on extreme lateral movement of the eyeballs. Sir Henry Swanzy reports that otherwise his eyes are perfectly normal in every respect. There is no trouble connected with either bladder or rectum.

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[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland on Friday, November 8, 1907.

During his previous stay in hospital the diagnosis of disseminated sclerosis was undoubtedly made on the weakness of the legs, with increased knee jerks, the tremor and the nystagmoid twitchings. The case is, however, a functional one. The pain and numbness complained of early in 1905 were probably due to sciatica. When he came into hospital on the present occasion ataxia was the most prominent feature of the case—to-night he is free from ataxia. The knee jerks are also less responsive, and even the tremor is not so marked. This morning it was quite absent from both arms. When I now examine him he exhibits to-night, for the first time, a spurious clonus in the right leg. It is due to spasm of the thigh muscles. The ankle is quite unmoved. On rubbing his forehead with my forefinger or on gently pulling the hairs of his legs he complains of pain. The hyperæsthesia is quite general.

The points, however, upon which I rely most confidently in pronouncing against the existence of an organic lesion in the brain and cord are—

1. Absence of ocular signs, such as optic nerve atrophy, contraction of the field of vision, limitation of muscular movements.

2. Absence of any involvement of the bladder and rectum.
3. Absence of true ankle clonus and toe-extension phenomenon.

Hyperæsthesia is less common in purely hysterical cases than anæsthesia, but taking this symptom of general hyperæsthesia with the loss of flesh and the general aspect of the patient, I regard his condition as neurasthenic rather than hysterical—in fact the case presents that alluring symptom group which is so frequently found in people who have received an injury for which compensation is expected. I exhibit this patient to-night in order to draw attention to the importance of making an accurate diagnosis in cases exhibiting nervous disturbances, because of the important difference in the prognosis between an hysterical or functional paraplegia like the present one and a case of, say, disseminated sclerosis. This man has been taking valerianates for the past ten days. I have told him also that he will get well, and already I am much impressed with the improvement that has taken place, and which I confidently expect will be continued.

ART. XVII.—*Intestinal Colic.*[a] By CHARLES GREGG SHERLOCK, M.D. Univ. Dub.

COLIC, or enteralgia, is an old word, which originally meant a severe sudden abdominal pain, supposed to be due to a morbid condition of the colon. Now some people consider it includes any sudden sharp abdominal pain, and therefore there are as many varieties of colic as there are abdominal and pelvic organs, and even more. The laity call any sudden sharp pain a colic. Some authors suggest that colic should refer to pain caused by muscular contraction of the walls of a viscus whose lumen is occluded ; others would limit the word to abdominal pain without any obvious cause, which pain they consider neuralgic ; but medical men generally mean by colic a sharp sudden pain originating either in the pelvis of the kidney, ureter, gall-bladder, biliary ducts, or intestine. Of course, to say a person is suffering from colic is not a diagnosis. The cause must be discovered to establish one. Intestinal colic is the only form considered here. The pain comes on suddenly without warning, but sometimes there is some nausea, with eructations and borborygmi. It is nearly always referred either to the umbilicus or above it over the colon, and it may radiate over the abdomen. The most important characteristic is the griping, and the patient calls the pain cutting, or tearing, or boring. It is extremely severe, and the patient tosses about if in bed. It is relieved by pressure, and this is important in distinguishing from peritonitis; but if there is organic disease, or great distension, pressure may increase the pain.

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[a] Being a Thesis for the Degree of Doctor of Medicine in the University of Dublin in April, 1907.

Intestinal colic is paroxysmal; it may last a few minutes, hours, or even a couple of days. Usually it ceases suddenly, and at the end there may be some flatus passed. Sometimes an attack consists of a number of paroxysms of different length and at varying intervals.

In a mild case of colic the pain is the most prominent symptom. If a more severe attack occurs the patient may cry out, may sweat, and may feel faint and weak afterwards. The expression is anxious, but not often like the *facies Hippocratica.* The temperature is usually subnormal, or sometimes slightly raised. The pulse varies in rate with the temperature. Obvious peristaltic waves may be seen. Very often the abdomen is hard and rigid. Sometimes the testicles are retracted. Nausea, and vomiting, and constant desire to micturate, even though little be passed. The pain is probably due to forcible contraction of the muscle of the intestine trying to overcome the resistance of an obstacle which there is a possibility of dislodging.

The commonest variety of colic is that form met with in young children, in whom the pain is recognised by their cries, restlessness, and drawing up of the legs. It is due to improper feeding, and is therefore commonest in hand fed babies. Gas accumulates in the intestine and distends it, thus causing pain, for the passage out of the gas cannot occur quick enough. New-born children may suffer from colic due to retention of meconium.

In adults the most important form of colic is due to lead. The metal causes constipation, and the muscular contractions striving to overcome this cause the pain. Copper is also supposed to produce colic. The simplest variety of colic in adults is due to constipation, and its mechanism is obvious. Then there is colic due to indigestible and irritating food. Apples, pears (if unripe), nuts, shell-fish, &c., are common causes. Individuals differ so much in powers of digestion that no list of indigestible food can be given. Constipation generally is coincident with this variety, but sometimes diarrhœa occurs from some slight enteritis. Nevertheless the mass may remain, causing its troublesome symptoms. If no treatment were adopted, after some time and much pain, the irritant would nearly always be passed, and the patient would recover. Cases in which this result would not follow are those of impaction of fæces or foreign bodies, such as gall-stones. But these are rather cases of intestinal obstruction.

There is perhaps no ailment in which diagnosis is more important. Peritonitis, acute intestinal obstruction, or even appendicitis has been mistaken for colic due to irritating food; in the early stage of acute intestinal obstruction diagnosis may be very difficult. The mistake may be made and a purge is given, but when this does not benefit, and when, as shown by frequent vomiting, by his appearance and the state of his pulse, he is very ill, the purge should on no account be repeated, for the case is probably not one of simple colic, and if it is not purges are the worst drugs to use.

Perforation of a hollow viscus, usually the stomach, at first sight may be regarded as colic, but it quickly either resembles intestinal obstruction or leads to obvious acute peritonitis. This accident is distinguished from colic from the facts that pressure increases pain, the pain is more diffuse, the abdomen is not so often rigid, and does not move on respiration, the temperature is commonly slightly raised, the pulse and expression are more like abdominal disease, and the vomiting is more severe. But any of these symptoms may occur in colic.

Appendicitis is sometimes mistaken for colic, but a little care will usually prevent such a mistake.

Other conditions occur, with some resemblance to intestinal colic, where a purge will not do much harm, and so a mistake is of less importance. It must be remembered that, apart from lead poisoning, severe intestinal colic in adults is fairly uncommon. Amongst cases mistaken for intestinal colic are cases of renal colic, of a stone in the cystic duct, of that form of gastric pain which comes on some hours after food, and is relieved by an alkali; also one must consider the possibility of neuralgia of the dorso-lumbar nerves, of disease of abdominal muscles, spinal disease, or locomotor ataxia. Organic diseases of the intestine may be mistaken for colic, for enteritis, simple non-ulcerative colitis, mucous colitis, malignant disease, and ascaris lumbricoides by reflex action cause griping pain. Griping pain also results from purgatives, cold liquids; and also in influenza there may occur as an early disturbance a sudden pain in the abdomen.

Then there is the point as to how far some cases of colic may be called functional, neuralgic or hysterical. One must remember the sensitiveness of the intestinal mucous membrane varies greatly, as shown by the different digestions of different people; also that the abdominal organs are greatly under the influence of nervous conditions. Hysterical vomiting occurs. Kidneys are often exposed for stone, when none are found. Diarrhœa and frequent micturition under excitement are well known. Probably some cases must be labelled neuralgic or hysterical, but only after very careful exclusion of everything else. In some hysterical cases there is great pain, rigidity of abdominal muscles, tenderness superficially; but then usually deep pressure is not more painful, and if the attention is diverted pressure is not objected to. In nervous women disease of pelvic organs may cause pain like colic. In some cases of colic, organic disease of the intra-abdominal ganglia and sympathetic nerves may exist, but no evidence of such a condition has ever been produced.

ART. XVIII.—*Biology and Therapeutics.*[a] By ROBERT J. ROWLETTE. M.D., Pathologist to the Rotunda and Dr. Steevens' Hospitals; Lecturer in Pathology, Queen's College, Galway; President of the University Biological Association.

IN bringing before you some considerations on the mutual relations of biology and therapeutics I do not profess to have anything original to offer, either the result of research or of fresh direction of thought. I only attempt to suggest to you the lines along which therapeutics have developed and the manner in which empirical therapeutics have been, and are, gradually giving way to rational. I must confess to using the word "biology" in the widest possible sense, as including not merely the special study generally so termed, but all the laws—physical, chemical, physiological—which govern the phenomena of living tissues. The attempt then to trace the relations between therapeutics and biology is in reality an attempt to trace the growth of rational therapeutics, particularly in our own day, and more especially the rapid stimulation of that growth as the result of investigations in the field of immunity.

In the daily pursuit of our profession there are two points of view which it should be our main object to keep in mutual relation—the scientific and the practical. To some minds the one is more attractive, to some the other, but in reality they should be regarded as complementary.

While we must be careful not to hamper pure science by demanding fruits from it at every step, we must nevertheless be careful that in the pursuit of knowledge as knowledge the fruits are not overlooked. Our ultimate concern, as a profession, is the prevention and cure of disease, and whatever can be applied to that purpose is one of our weapons. In many cases we do not know how our weapons are effective—they have been seized, in the first instance perhaps, by chance and found useful—and we would be foolish indeed to discard them till better are found. In other cases, however, we use well planned machines, deduced from scientific principles, and it is properly our desire to substitute these for the cruder weapons wherever possible.

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[a] The Presidential Address to the Dublin University Biological Association, delivered on Thursday, November 21, 1907.

At the present time, it seems to me, this substitution is taking place more rapidly than at any previous era, and the point of view as regards treatment has altered fast in our generation. It is not merely that new facts have been brought to our knowledge, but that new principles have been introduced. I hope it may be instructive to contrast briefly, and in general terms, these new principles with the older, and to notice how the development has depended on a basis of biological knowledge, how the usual modes of treatment, while justified by experience, are based on biological law in a way in which much of the older treatment was not. It may be possible to judge therefrom the lines on which progress in therapeutics is most likely to proceed during the next few years. He would be a rash man who would venture to predict any further ahead, for no bounds can be set to the advance of knowledge, and just as epoch-making discoveries in the past have turned medical progress into altogether new directions, so further discoveries may in time make what we now regard as most modern of interest merely to the curious in medical history.

That in the past medical treatment has been dependent to a great extent on knowledge which hardly deserved the name of science, was inevitable. Our practical activities keep ahead of our scientific knowledge in many matters beside the treatment of disease. Man and his ancestors ate bread or the fruits of the field long before anything was known of the physiology of digestion and nutrition, and practitioners of medicine in all ages, including our own, have very properly employed measures in the treatment of disease for which there was no other justification than the excellent one of experience. Seekers after knowledge, however, have never been content with this state of affairs, but have ever sought to find the scientific basis underlying familiar phenomena, to explain them by reference to principles, and to further both our knowledge and our activity by applying these principles to other cases. The history of modern medicine as of other branches of applied science has, therefore, been the growth of principles and laws to bind facts together, the application of these laws over wider areas, and the disappearance from the field of belief of alleged occurrences which were found to be inconsistent with known laws.

In the past it was for long customary in the history of medicine to distinguish sharply two schools of treatment—the empirical and the rational. The empiricists regarded disease as a phenomenon whose natural history had to be studied as a mere group of events without any regard to questions of cause. The object of diagnosis was to discover not the pathological condition of the patient, but the disease from which he was suffering. Treatment consisted in the administration of such measures as had been found followed by success in other cases of the disease in the past. It is to be noted that there was no hypothesis as to the manner in which the treatment was efficacious, nor any attempt to discover the set of morbid conditions in the patient which gave rise to his symptoms. The group of symptoms constituted a disease as a distinct entity, and this disease, not the patient, was treated. Moreover, as the logic of the empiricist was rarely very strict, he was likely to fall into error in his conclusions as to what measures had been successful. In particular, the fallacy *post hoc, ergo propter hoc* was his snare. The treatment adopted in a particular case of disease which ended in recovery was credited with the recovery, and was employed in all future cases of the same disease. Such treatment had a tendency to become a matter of routine, and advance in knowledge was slow. It is to a survival of such a view of the art of medicine that the presentation of therapeutical knowledge in the form of "a dictionary of treatment" is still possible. Having learned the name of the disease, a reference to such a volume furnishes you at once with the appropriate treatment. It was this habit, too, which stereotyped such treatment as bleeding in the case of fevers, regardless of indications for or against, and it was almost a revolution when the physician learnt that bleeding was not always right. In similar fashion, a drug which was thought useful in one case was used in every case of the same disease, and its use gradually became a fetish. We are by no means free from this habit even yet, and there are physicians who treat every case of pneumonia with stimulants, every case of heart disease with digitalis, of rheumatism with salicylates, entirely regardless of the indications for or against each drug in the particular case. Along with this tendency to make a fetish of a particular drug was the habit of combining a huge number of drugs in one prescription, in the hope that one or other of them might be of use. The physician took no trouble to learn which of them, if any, had proved efficacious, but, satisfied that somewhere in his quiver was a good arrow, he discharged the whole quiver at once. Nowadays many are inclined to laugh at the physician who writes elaborate prescriptions; but a couple of centuries ago a prescription of six or twelve preparations was meagre in the extreme, and the learned physician thought nothing of combining twenty or thirty in one mixture. Thus, to take a typical example, let me read you the composition of the famous "*Aqua Epidemica*, or London Plague-water," whose merits were much vaunted in the great plague of London in 1665 :—

"Take of the roots of tormentil, angelica, peony, liquorish, elicampane, of each half an ounce; of the leaves of sage, the greater celandine, rue, the tops of rosemary, wormwood, sundew, mugwort, burnet, dragons, scabious, agrimony, baume, carduus benedictus, betony, the lesser centaury, of the leaves and flowers of marigolds, of each a handful; steep them five days in four quarts of the best white-wine, and distil them in ashes in a glass alembeck."

In contrast to this, I understand that the common plague mixture in use in India at the present day is carbolic acid in three-drop doses.

Let me read to you another prescription of the same period, that of the famous "Gascons' Powder," whose merits I leave you to guess at. The animal pharmacopœia of that day was, as you will see, more extended than ours :—

"Take prepared pearl, crabs' eyes, red coral, white amber, hartshorn, oriental bezoar-stone, of each a quarter of an ounce; of the black tops of crabs' claws, one ounce and a half; beat them all into powder, and mix them. The mixed powder you may make into balls by incorporating it with jelly of hartshorn, or thin mucilage of gumarabick extracted with carduus water."

In the same collection from which I have selected these, *The Family Physician*, by Gideon Harvey, published in 1678, I find a cure for consumption, which begins:—"Take of garden snails . . . "

In contrast to the empirical school, which led to such extravagances as these, was the *dogmatic* or *rational* school. The dogmatist attempted to study the nature of disease—its ætiology, anatomy, and pathology, and to deduce therefrom the appropriate treatment. The interest of the dogmatist was centered in knowledge as such, whereas that of the empiricist was in practical results.

The fallacy of dogmatism as a method was that its principles being often badly established its results were without foundation. The structure might be beautiful and stately, but the base was insecure. In the language of logic, the hypothesis lacked verification. For there is, in truth, no *à priori* knowledge possible as regards matters of fact, and it is with matters of fact we have to deal.

Of the dogmatic school of medicine, as of other dogmatic schools, there were many sects having little in common except a common method, each having chosen a different fundamental principle of explanation or theory of disease and treatment. Thus there was the very ancient theory, according to which all disease was due to excess of hot or cold, moist or dry, and all treatment consisted in the application of the opposite. Later came the system of the humours, whose terminology of "sanguine," "phlegmatic," "melancholic," "bilious," lasts to the present. The most notable example in modern medicine of a dogmatic school is homœopathy, while there are various sects of osteopaths, neuropaths, and others, which flourish more freely in other countries than ours.

The dogmatists, in spite of their logical faults, had the root of the matter in them, in that they had a conception of scientific method and of the unity of science. Their lack of logic, however, in the framing of their fundamental principles, and their contempt of experience as a test for them, prevented their achieving anything of importance.

To each of these great schools of thought, however, Modern Medicine owes much. From the empiricists we have learnt the great body of facts which we are gradually attempting to systematise by the methods of the rationalists. We work by a more rigorous logic of science than our predecessors. We are more careful in drawing our inferences from experience, and we endeavour to follow Bacon's advice of looking for a "contradictory instance." We frame our hypotheses with more care, and we test them more strictly, while in doubtful cases we are content to accept the conclusions tentatively and for the time.

On the other hand, modern medicine is not content with enumerating facts or recording empirical laws, however important they may be. It looks for the explanation and demands the cause. It attempts to reduce therapeutics to a branch of biology. Accepting the results of experience for what they are worth, it tries to explain them, to systematise them, to reduce them to the general laws of physiology, of mechanics, of chemistry. It is in this harmonising of clinical experience with laboratory results that the line of progress for scientific medicine lies, and it is necessary for us to remember that it is only by constantly keeping these studies together that the findings of science can properly be applied to the practice of medicine.

While, then, our aim in Therapeutics is to make it a science as well as an art, to make it rational and not merely empirical, we must nevertheless confess that we are still far from being able to explain the principles of much of our treatment. Our drug treatment, as a whole, comes down by direct descent from the empiricists, and it still suffers from many of their faults. It is true that our scientific knowledge is far in advance of theirs, and we know something of *how* drugs produce their effects, while they only knew the effects that were produced. Nevertheless, much of our therapeutical knowledge is still purely empirical. We know, as did our ancestors two hundred years ago, that quicksilver is good treatment for syphilis, but we understand little more than they in what way it acts. We believe that salicylates are useful in rheumatic fever, and we guess at the secret of their efficiency. We speak of certain drugs as "specific" for certain diseases, meaning thereby that they seldom fail to produce good effects, but of the infinite number of steps between the administration of the drug and the result in the alleviation of the disease we know next to nothing. With this position, however, the modern physician is dissatisfied, and it is precisely in this dissatisfaction that his attitude is more scientific than that of the empiricist from whom he derives. The modern always seeks to know the why and how of therapeutic action, the empiricist was satisfied with the fact.

The great simplification of the pharmacopœia, of which I have given some examples, is an obvious result of this changed attitude. The modern physician, even he who has most faith in drug treatment, is content with a few, with most of whose actions he is familiar. But, taken all round, the reliance on drugs is much less than it was even a generation ago. I do not mean that drugs are to be contemned or discarded, for the further experience goes the more we are convinced of the great value of certain drugs. We cannot do without them. Nevertheless, the general trend of opinion is toward placing more trust in other measures. The popular idea of a medical man as a man whose function it is to give a bottle of medicine is gradually disappearing. The public is gradually recognising the value of advice as well as of medicine. Old prejudices die hard, however, and the prescription of medicine is sometimes a truckling to prejudice rather than an item of scientific treatment. The patient expects a prescription, and the physician gives it, though he may excuse his action to himself by reflecting that suggestive treatment is effective.

It has been recognised of the various grave diseases, one after another, that their treatment is not a matter of the giving of medicine, but that other measures are of greater importance.

Phthisis, pneumonia, typhoid fever, and the others are treated when possible without any medicine, and when medicine is administered it is used to relieve the accidents of the disease, not to cure the essentials.

These changes, you will agree, are signs that drug treatment is becoming more scientific, that we adopt it less with a blind faith in tradition, and more with a reasoned knowledge of the particular actions of particular drugs. We have become more sceptical, and scepticism is the first, though by no means the last, step towards scientific knowledge. As drug treatment has receded into the background in modern therapeutics, other measures with more secure scientific basis have taken its place. Nursing and general management of the patient are, in the treatment of most diseases, more important than the administration of drugs. But nursing and general management are merely the discipline of the patient on physiological principles as applied to his particular condition. We regulate diet by a knowledge, not only of the physiology of digestion but by a knowledge, more or less accurate, of the pathological conditions which are present. This is to say that such points as diet, management, exercise, and so on are to a great extent decided by reference to scientific laws, and not merely by the dictates of experience or the maxims of tradition.

In the field of Preventive Medicine more than anywhere else are our practical methods based on hard science. Not only bacteriology but chemistry and physiology, the institutes of medicine, to use the old term, contribute each its share of the fundamental principles. The field of activity of the sanitarian has increased in exact proportion to the increase of knowledge gained in the laboratory. I need only refer to one or two examples. The discovery of the tubercle bacillus by Koch was the starting-ground for the campaign against tuberculosis which in many civilized countries—Ireland cannot be included—has materially checked the ravages of this disease. The discovery of the typhoid bacillus and the tracing of its life history have rendered it possible for us to take rational measures to prevent the spread of infection, and the number of deaths from the disease has decreased enormously. The minute death-rate in the Japanese forces during the late war with Russia shows what may be expected when the lessons of science are rigorously applied. The researches of Ross into the life-histories of the malarial organism and its host have rendered it possible to rid whole areas of malaria. If a prophecy may be at all justified, I might venture to predict that the discovery of the organism of syphilis by Schaudinn can hardly fail to be followed by practical knowledge of great value in the control of that disease.

I have said nothing so far of the enormous advances made by surgery in our own time. These advances are, of course, due to two important discoveries—that of anæsthetics, and that of the nature of sepsis.

In the case of sepsis, the debt of surgery is due directly to the biologist, and we have, moreover, an instructive example of the essential unity of all science. Nothing could seem further apart at first sight than fermentation of organed compounds, and surgical fever. Yet, Pasteur had not long shown that fermentation was due to a minute vegetable parasite, when Lister pointed out that sepsis, in all its forms, had a similar cause. The steps of progress—all due to reasoned forethought, tested one by one by laboratory experiment and clinical observation—by which the antiseptic methods of Lister have given place to the modern aseptic surgery, it is needless to trace. They are fresh in the memory of most of us.

I have endeavoured to suggest, rather than to trace, how therapeutics, in many of its branches, has come more and more to rest on a scientific or rational base. Drug treatment remains, to a great extent, empirical, but the rational increases every day, and much of the old empirical disappears. Hygiene, personal and public, preventive medicine, and surgery, considered as therapeutic arts, all owe their recent advances to the direct application of scientific discoveries to practice.

I have left to the last the development of therapeutics which, most directly derived from biological experiments, seems to have given us a weapon which has potentialities against a certain class of diseases no one can at present attempt to circumscribe. I refer to the treatment, curative and preventive, of bacterial diseases by vaccines and antitoxins, or, in other words, to the treatment of disease by the production of artificial immunity. It may be necessary to enter into this part of my subject with more detail, as there is still considerable misunderstanding of the methods employed, and the principles on which they are based. Nevertheless, I will limit myself strictly to general principles, and only make use of particulars as far as is necessary for purposes of illustration.

The general fact of immunity has, of course, been familiar in medicine for centuries. It was always recognised that an attack of certain diseases protected the sufferer against further attacks of the same disease. Application of this knowledge was made in the East for an unknown length of time in the practice of inoculation for the small-pox. This method of preventive treatment—heroic, but useful—was introduced into England from Constantinople early in the eighteenth century, and continued in use for a hundred years or more. In principle it differed but slightly from Jenner's vaccination, which took its place, though it had many disadvantages from which vaccination is free. Vaccinia, or cow-pox, the disease transmitted in ordinary vaccination, is, as far as we know, merely small-pox, altered by passage through cattle, and it protects against future attacks of small-pox exactly as did inoculation by the small-pox virus itself, though not to so high a degree. Vaccination is, in fact, what we have come to know as treatment by an attenuated virus.

In modern times it has been shown that immunity similar in nature, though varying in degree, can be produced by means less disturbing to the patient than giving him a mild form of the disease from which he seeks protection. The means are various. He may be inoculated with small doses of the infective material, insufficient to produce the disease, but sufficient to cause a definite protective reaction; or he may be inoculated with doses of the infecting bacteria whose vitality has been destroyed by antiseptics, by moderate heat, or by mechanical means. Or, again, he may, in certain cases, be inoculated with a soluble extract from the bodies of the bacteria, the bacteria themselves being kept back by filtration. These methods constitute what is known as *active* immunisation, the material inoculated apparently acting as a stimulus to the body to produce a condition of immunity. But it is further found that the blood-serum of an animal which has been actively immunised will, by injection into another animal, confer a certain degree of immunity, which is distinguished as *passive*. These are all facts discovered first by experiment on animals, and afterwards applied to the treatment of human beings.

We must next see, as far as we can, what are the changes going on in the body to account for this clinical fact of immunity. It has been shown that when an animal is in process of being actively immunised its serum acquires the power—a power which can be exhibited *in vitro*—of rapidly killing and digesting the bacteria with which it is being inoculated. This phenomenon does not stand by itself. If an animal be treated for some time with injections of the blood of another species, its serum gradually attains a specific destructive power toward the corpuscles of the other species. Moreover, when other living cells, as spermatozoa, epithelial cells, or liver cells, are used instead of blood corpuscles or bacteria, a similar reaction is obtained. These phenomena receive the generic name of *cytolysis*, and the particular terms of *bacteriolysis*, *hæmolysis*, and so on. The action must be due to the production in the serum of certain bodies, specific to the invading cell, and known generically as *lysins*.

Side by side with the production of these lysins certain other protective bodies are produced. Thus, during the course of immunisation, bodies known as *antitoxins* appear which have the power of neutralising the toxins of the particular bacteria. Again, when an animal is treated with the serum of another species it gains the power of rapidly precipitating the albumins of the foreign serum. Moreover, in similar fashion, an animal's serum gains the power of agglutinating or clumping the invading bacteria or cells, a phenomenon made use of in the ordinary clinical test for typhoid fever called after Widal. Of much interest are the class of bodies described by Wright under the name of *opsonins*. As you remember, a considerable part of the protection of the body against invading bacteria is played by the class of cells known as *phagocytes*, of which the most important are the polynuclear leucocytes. Wright has shown that when mixed with serum from an animal immunised against any particular organism the phagocytes are more active toward that organism than when mixed with normal serum. This increased activity he explains as due to the production in immunised serum of bodies which he calls *opsonins* (or cooks), whose function it is to act on the bacteria in such a way as to render them an easier prey for the phagocytes.

These various protective bodies may be grouped together under the term "anti-bodies," or, as Wright prefers, "anti-tropins." So far, I have been speaking of what takes place when animals are the subject of experiment. But changes of a parallel nature take place in the human body during its struggle against, and its recovery from, an infectious disease. The struggle that goes on between the patient and the disease is exactly the struggle between the live cells of the patient and the protective bodies they produce on the one hand, and the invading organisms and the poisons they produce on the other. If the organisms and their weapons are too strong, then the patient succumbs to the mere force of the disease. On the other hand, if the patient is able to produce sufficient protective bodies, then the force of the disease is diminished, local lesions are limited, and recovery takes place. The struggle may be short and sharp, as in pneumonia or diphtheria, or tedious and protracted, as in tuberculosis, but on these two forces the result in the main depends.

How then are these biological facts applied to therapeutical practice? Our indication is obviously to strengthen the hosts of defence and weaken those of attack. We may proceed at our choice, to produce either active or passive immunity. The latter is the method employed universally in the prevention and cure of diphtheria. Toxins are prepared by obtaining the filtrate from fluid cultures of the diphtheria bacillus of a couple of weeks' growth. A horse is subjected to periodic injections with small doses of the toxin for a term of about six months. At the end of that time his serum has gained marked antitoxic properties, and, being drawn off and standardised, is used by injection to aid the body in its fight against the attack of the diphtheria bacillus. If given to persons exposed to infection, it diminishes their liability. If given to patients already infected it helps them to recovery. Of this fact there is no question of doubt. Since antitoxin treatment has come into general use the mortality rate in diphtheria has diminished from something like 40 per cent. to about 14 per cent. In the case of diphtheria, then, we are able to add such important allies to the forces of defence that victory is much better assured. Similar treatment has been adopted in the case of tetanus, though here the effects are not so marked.

The use of antitoxins, however, is limited to those diseases in which the serious conditions are due to toxæmia. In diseases in which the bacteria do not secrete a soluble toxin, and they are the great majority of infectious diseases, antitoxins are of no avail. In them, therefore, we must rely on some method of producing active immunity.

In the historic case of vaccination, inoculation with the virus of cow-pox confers a considerable degree of immunity against small-pox. This is, of course, a crude, though effective, method of procedure, but it is the best at our command until the organism of the disease is discovered and grown under artificial conditions. In the case, however, of diseases of known causation, more refined methods are pursued. Of course these methods are yet far from perfect, for our experience of them is very brief, but, nevertheless, their efficacy in many diseases is such as not only to encourage, but to enforce, further use of them. As experience becomes wider, the methods will doubtless undergo substantial improvement.

It is not my concern here to detail the special methods as applied to the various diseases, but rather to state the general principles. The virus or vaccine most commonly employed consists of the dead bodies of the bacteria themselves, either whole or mechanically crushed. These seem to have as good an effect in calling out the reaction of the subject as an attenuated virus of the live bacteria, while there is no risk of giving rise to a general infection.

In preparing the vaccine it is advisable, in the case of certain diseases, that it should be of the identical strain of bacteria causing the infection. Thus, in the treatment of purulent acne, there is little use in inoculating the patient unless the vaccine be obtained from cultures made from his own pus. Fortunately, the preparation of the vaccine is within the powers of any skilled worker, who has at hand the resourses of a bacteriological laboratory. In the great majority of diseases, however, while an auto-vaccine, as it is called, would probably give the best results its use is not a necessity, and a suitable vaccine can be obtained at moderate price from reputable firms. Of course, it is necessary in the first instance to make sure of the nature of the infection present.

We have next to consider what changes take place in the body as a result of vaccine treatment. It is required to know how the production of protective substances is affected by an inoculation. The method employed is the ingenious one devised by Wright for estimating the relative quantity of opsonins in the blood. There is reason to believe that the various protective bodies are produced in proportion to each other. Granting for the moment the approximate accuracy of Wright's method of opsonic determination, the following changes take place. I cannot do better than quote Wright's words :—[a]

" There succeeds in every case upon the inoculation of a vaccine *a negative* phase, characterised by an impoverishment of the blood in antitropic substances. With this ebb, or negative phase, is associated a phase of increased susceptibility to bacterial infection, or, as the case may be, of increased sensibility to the toxic effect of the particular vaccine. This negative phase generally coincides with a period of greater or less constitutional distress.

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[a] " A Short Treatise on Anti-Typhoid Inoculation." By A. E. Wright. Westminster. 1904. Pp. 8, 9.

"The negative phase is succeeded by a *positive phase*, characterised by the flooding of the circulating blood with newly-formed antitropic substances. It may be presumed that this phase is associated with a maximum resistance to a bacterial invasion and a minimum sensibility to the poisonous action of the particular vaccine.

"There supervenes upon the positive phase a reflow or sinking away of the inflowing wave, leaving behind it a permanent—or, relatively speaking, permanent—high tide of immunity. During this period the blood shows, as compared with the period antecedent to inoculation, an increased content in antitropic elements. Moreover, the organism seems to possess during this period, and it would seem even afterwards, a greater power of response to a renewal of the vaccinating stimulus."

The sequence of events may, therefore, be summed up by saying that following each inoculation is a temporary depression of resistance, followed by an increased resistance most marked at the beginning. Too large a dose is likely to accentuate the depression without increasing the resistance or even to cause a permanent depression. In like fashion, if a second dose be given during the negative phase of the first, the negative phase becomes excessive and the positive phase does not appear. It is, therefore, of the utmost importance to the success of vaccine treatment that a suitable dose be given, and that the intervals be of sufficient length. The decision of the quantity of the dose can be settled only by experience, but in the case of most diseases where the treatment has been applied the suitable dose is now determined. In the early days of inoculation treatment the dose employed was enormously greater than is now customary. Thus, the dose of tuberculin habitually used at present is from $\frac{1}{2000}$ to $\frac{1}{1000}$ of that originally recommended by Koch. As a rule, much better results are obtained by repeated small doses than by a few large ones. As to proper timing of the injections, Wright maintains that it is necessary to keep a careful record of the opsonic content of the blood, and to beware of giving an injection during the negative phase. Apart from the question whether our means of determining the opsonic content are sufficiently accurate for the result to serve as a guide, many practical workers maintain that if a sufficiently long interval be left—ten days to a fortnight in most cases—there is little danger of causing a cumulative negative phase. It is possible that by so waiting we may lose a little time and fail to effect the very best results. On the other hand, the difficulty of making frequent opsonic determinations would prevent the wide application of the method, and I have little doubt that we are perfectly justified, in the case of diseases where we already have experience of the treatment, in giving injections at regular intervals. If any untoward clinical results follow the injections, such as rise of temperature or severe local reaction, it is wise to wait a little, to have an opsonic determination made, and perhaps to resume the treatment with diminished doses.

The possibility of a marked negative phase suggests another caution which limits us considerably in the use of inoculation as a curative measure. In acute diseases where even a slight depression of resistance might be dangerous to the patient the treatment is inapplicable.

We can see now to what kinds of disease vaccine treatment is applicable—first, as a prophylactic; and secondly, as a curative agent. In the case of probably all acute bacterial diseases, whose infective agent is known, there is hope of the success of vaccine treatment when used as a preventive. In addition, there are two diseases of which the infective agent is unknown, where for years the treatment has been effective—small-pox and rabies. It is a matter chiefly of expediency, therefore, to decide on the diseases against which it is advisable to practise prophylactic treatment. It is, of course, impracticable to inoculate against every infective disease. In the event, however, of a subject being likely to be exposed specially to the infection of any disease, it is well to inoculate him beforehand. Thus, in regard to people going to India or other regions where typhoid and cholera are rife, inoculation certainly diminishes their liability toward infection.

As a curative measure, I have already mentioned that the treatment has certain limitations. In the case of chronic diseases, however, especially those where there is reason to believe that the disease is limited in its extent, there is the best chance of success. Thus, in lupus, in tuberculosis of joints and glands, in acne, in recurrent furuncle, in gleet, in most chronic septic conditions, vaccine treatment has already proved efficacious. It is probable that in the future it will have a much wider application, and that such diseases as dental caries and endometritis will be brought under its control.

I have endeavoured to sketch as lightly as possible the main features of this new method. It has certain general characters which, I think, distinguish it from most other therapeutic agents. In drug treatment, and to a certain extent in surgery, we try by a touch here and a shove there to help nature along the road to recovery; in vaccine treatment we put all our endeavours to stimulate nature to pursue her own path. We do not interfere at every step with her course, but when she is sluggish we give the stimulus to start and we leave her to herself until she again begins to go slow. It is just in this reliance on nature that the method seems to me more rational than any other treatment with which we are acquainted. It is true that in this it only differs in degree from control of diet and general hygiene of the body, but it differs to a considerable degree.

The study of immunity also opens possibilities to us of which we did not think before. It is probable that many diseases of whose cause we are at present ignorant will turn out to be forms of toxæmia. To them antitoxins may be discovered, and thus they will be brought under control. It would be rash to particularise, but the various blood diseases occur at once as well as such conditions as all forms of nephritis. Whether I am right in these suggestions time alone can tell, but whether or not vaccine treatment has a future before it. The gradual improvement of its methods must bring with it a wider applicability to diseased conditions. It in its turn may give place to something better, but for us at present we must take it as it is, and do our best to make it an efficient weapon.

In conclusion, let me bring out the line of development which I have tried to show running through the modern history of therapeutics. In the days of the empiricists and earlier, back to the times of primitive medicine, reliance was placed entirely on uncritical experience. With the growth of modern science during the past two or three centuries, the sceptical spirit appeared, and everything was put to the test. In the first instance the effect on therapeutics was negative, causing a gradual elimination of measures that could not stand critical examination. Later, the great increase of scientific knowledge has given positive additions to therapeutics, as for instance, in aseptic surgery and in preventive medicine, as well as in immunity. The latest developments seem to me of the greatest interest, in that they spring directly out of biological research. It was from the study of the results of the inoculation of animals with various bacteria that Koch, Behring, Wright, and the other workers in this field have been led to the practical therapeutical results which I have outlined in the latter part of my paper.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Medical Epitome Series. Edited by V. C. PEDERSEN, A.M., M.D. London: Hodder & Stoughton. 1905.

1. *Physics and Inorganic Chemistry.* By ALEXIUS M'GLANNAN, M.D. Pp. 216.
2. *Organic and Physiologic Chemistry.* By ALEXIUS M'GLANNAN, M.D. Pp. 246.
3. *Normal Histology.* By JOHN R. WATHEN, A.B., M.D. Pp. 229.

ALTHOUGH these and their companion volumes bear on the title page the name of a London publishing firm, they were written and printed in the United States. The whole series also, consisting of sixteen volumes, is edited by Dr. V. C Pedersen, A.M., Instructor in Surgery and Anæsthetist and Instructor in Anæsthesia of the New York Polyclinic Medical School and Hospital. These facts explain a sentence in the Editor's Preface which otherwise might puzzle a British reader—it runs: "In order to render the volumes suitable for *quizzing*, and yet preserve the continuity of the text unbroken, the questions have been gathered at the end of each chapter." "Quizzing" is, of course, American for questioning.

We have grouped together several of the volumes which treat of certain cognate subjects in the earlier part of the medical curriculum.

1. Dr. Alexius M'Glannan, Associate Professor of Physiologic Chemistry and Instructor in the Clinical Laboratory of the College of Physicians and Surgeons, Baltimore, Maryland, contributes the volumes on Physics and Inorganic Chemistry, and that on Organic and Physiologic Chemistry. In the former volume only sixty pages are devoted to Physics, yet the author manages to convey a great deal of information in those pages. There are five chapters—the first is given up to definitions;

the others treat of heat, light, electricity, and magnetism respectively. The necessity for economising space sometimes interferes with clearness; for example, under the heading "The Thermometer" we read (page 30): "DEFINITION.—These (*sic*) are instruments for measuring variations in *heat-intensity*. PRINCIPLE.—The construction of thermometers depends upon expansion. The commonest are the *mercury* thermometers. CONSTRUCTION.—Mercury is introduced into a capillary glass-tube with a bulb, and boiled. The tube is then sealed. The instrument is then placed in boiling water and the boiling-point of water marked, next in melting ice, and the freezing-point of water noted." Passing by the inadequate explanation of the principle of the thermometer, we observe that no mention is made of calibration—a very vital process in the construction of a thermometer, and we shudder to think of the fate of "the instrument" if suddenly placed in boiling water and as suddenly plunged into melting ice!

Nor is our author much happier in his chemistry. We were fairly puzzled when we read the following sentence (page 65): "The molecular weight of a compound is determined by methods somewhat similar to those for atomic weights. 1. By Chemical Analysis. The percentage composition of a substance is calculated, and from it the molecular weights determined—*e.g.*, a substance on analysis shows 46 per cent. of sodium, 12 per cent. of carbon, and 48 per cent. of oxygen. The molecule, by inference, consists of *two* atoms of sodium, *one* of carbon, and *three* of oxygen, because the atomic weights of these elements are 23, 12, and 16, respectively; hence the molecular weight will be 85, and the *composition*, expressed by the formula Na_2CO_3."

Bad logic, bad English, bad arithmetic, and bad chemistry all unite to mystify the reader of these sentences. The percentage composition of sodium carbonate is not 46 of sodium, 12 of carbon, and 48 of oxygen, for these figures added together make 106, not 100. Passing by the bad English, the molecular weight of Na_2CO_3 works out, not as 85, but as 106—the sum of the atomic weights of the elements composing its molecule, namely, $Na_2 = 46$, $C = 12$, $O_3 = 48$. From these figures it is easy to determine the percentage composition by rule of three calculations—namely, Na = 43.4, C = 11.3, and O = 45.3.

2. Dr. M'Glannan's other volume—that on "Organic and Physiologic Chemistry"—is disfigured by its loose diction, though it covers a large field and contains much information about a difficult subject.

3. Dr. Wathen has succeeded in compressing into a short compass a very clear and useful account of the normal histology of the human body. But the chief value of the work is embodied in its illustrations, which are taken for the most part and with all due acknowledgment from authors of the first reputation. "Normal Histology" will be a boon to the medical student. We should mention that a special chapter on methods of preparing and staining sections of tissues bring the volume to a close.

The Johns Hopkins Hospital Reports. Vol. XIII. Studies in Urological Surgery by various Authors.

THIS is the thirteenth instalment of the Reports issued by the press of the above celebrated institution. The work described is that done by Dr. H. H. Young and his assistants.

The scientific exactitude and the brilliancy of the original work described is on a level with that of the previous reports, not leaving us with the feeling that there is no more to be said, but opening up fresh paths of inquiry. Throughout the volume are many valuable suggestions, which are of great importance to the specialist and general practitioner. In an article by H. H. Young and J. W. Churchman, the impossibility of differentiating the smegma bacillus from the bacillus of tuberculosis is emphasised. Young points out that the only safe way of arriving at a sure diagnosis of tubercle in the male is by previous careful irrigation of the urethra before collecting a sample for examination.

The treatment of stricture is fully dealt with, stress being laid on the necessity of treatment by gradual and continued dilatation. The dangers and uselessness of internal urethrotomy without other measures are made prominent. The method described of treating dense strictures by partial excision of the cicatricial mass and suture of periurethral tissues over a catheter is evidently one well worth extensive trial.

Chronic prostatitis is fully dealt with; the nature and the site of the referred pain is of great interest—in sixty-four cases occurring low in the back, in eight cases over the kidneys, and in ten simulating renal colic. The conclusion that "chronic prostatitis is one of the most common diseases with which the male is afflicted" may be true in America. Prostatic massage is fully dealt with, and is said to be unquestionably the most potent therapeutic measure we possess. That an operator of Professor Young's experience should advise perineal lithotomy in preference to suprapubic, quoting, as he does, statistics which fully uphold his views, is thus explained by him:—Before the use of the prostatic tractor, operation by this route was a "blind," and, therefore, unsurgical procedure, and hence deservedly fell into disrepute.

That lateral urethrotomy gives half the mortality of median owing to the rectum escaping injury is a fact well worth remembering.

There is an interesting chapter on the operative treatment of vesical diverticula. Professor Young points out that in many cases these pouches fail to disappear when the urethra has been fully dilated, and free evacuation of the bladder restored. He accounts for this by the absence of muscular tissue in their walls. In cases where they continue to give rise to symptoms, he advises their extirpation.

Probably the most interesting case described in this volume is one of double renal pelvis and ureter, with stone in the upper half of the left kidney, complicated by a stone in the right kidney. After most careful urethral catheterisation, and taking X-ray photos, the stone on the left side was not diagnosticated, and an operation was undertaken on the right side. Calculus anuria resulted with death—the mistake arising from the photo being taken an inch too low, coupled with the fact that the upper ureter on the left side was completely blocked with the stone. In a report of two cases of pyonephrosis, due to the *Bacillus typhosus*, Dr. Young and Dr. L. C. L hr show that in such cases this organism may survive in an active state in purulent kidneys for years:

in one case eight, and in a second ten years. The danger, from a public health point of view, is obvious. A very striking article by Dr. Beatjer on the use of X-rays in diagnosis of calculi is full of useful information, such as "calculi rarely occur in the ureter except in its lower two inches." He reports seventy-five cases in which a positive report of stone having been given, fifty-three came up for operation, and in all the diagnosis was confirmed. Again, where a negative diagnosis was made in sixty cases, on exploration in only one did it prove fallacious.

The volume ends with chapters on the Structure of Urinary Calculi, by H. A Fowler, M.D.; on a case of Cystinuria, with the formation of Calculi, by the same author; a case of Traumatic Atrophy of the Testicle, by Dr. Churchman; and, finally, with a description of the Genito-urinary Dispensary at Johns Hopkins Hospital, by Professor Young.

Pathology, General and Special. By R. TANNER HEWLETT, M.D., F.R.C.P.; Professor of General Pathology in King's College, London. Second Edition. London: J. & A. Churchill. 1907.

THE appearance, within eighteen months of its first publication, of a second edition of this book is a matter on which we offer our congratulations to the author. The fact that the first edition has so soon been exhausted speaks much for the discrimination of the medical student. Prior to the appearance of this book there was no manual on pathology that a teacher could recommend with confidence to a class, although many works on the subject undoubtedly existed. This book, therefore, fills a long-felt need. It gives a concise and clear account of the important facts and principles of pathology without any needless discussion of purely theoretical considerations, and without too great wealth of detail. Perhaps, indeed, it would be better here and there for a little more detail in describing the pathology of special organs. We would suggest that in future editions more space should be devoted to special pathology, by cutting down the chapters on Œdema, Pyrexia, and Disorders of Metabolism. These subjects are generally dealt with in both text-books of medicine and text-books of physiology, and could therefore be very well omitted here, while a little expansion on the lines we have indicated would enable a student to make better use of the book as an aid to the study and interpretation of his microscopical sections.

The present volume is well up-to-date. The modern theories of fatty change are discussed, as are also the nature of the chromosomes in cancer cells, the nature of opsonins, the changes in the salts of the plasma associated with the occurrence of neoplasms, and many other facts elucidated by recent research work. Thirty-one plates are included, and also a few figures in the text. Most of the former are photographs of microscopical appearances, and are very useful. The book is well bound, and has an adequate index.

Treatment of the Diseases of Children. By CHARLES GETMORE KERLEY, M.D.; Professor of Diseases of Children, New York Polyclinic; President of the American Pediatric Society. First Edition. Illustrated. Philadelphia and London: W. B. Saunders Co. 1907.

THIS is a large-sized book of over 550 pages, entirely devoted to the detailed exposition of the writer's views and methods in the treatment of children's diseases. Special stress is laid by the writer on the importance of detail, and of investigating every circumstance in connection with the sicknesses met with in infant life. Without this attention, and the most minute instructions on the part of the physician, important facts may be overlooked, and mistakes may be made by those responsible for carrying out the orders that have been given. This we regard as the proper spirit in which a book of the present nature should be written, and, in consequence, one does not object to the repetition that is found here and there in its pages.

The volume does not contain anything very new, but is a record of experience of the most suitable treatment to adopt in any given circumstances, and as the experience seems in many instances to have been obtained by a gradual process of elimination of unsatisfactory methods, instead of by simply adopting a routine and sticking to it, the conclusions are valuable. The book contains a moderate number of figures, most of which are designed to illustrate various processes of physical therapy. A good many useful prescriptions are also included, and the variations in dosage, according to the age of the patient, are in every case indicated. Most careful attention is given to the question of diet, and under most of the diseases we find the treatment indicated under the two main headings of diet and drugs. On the whole, we think that Dr. Kerley has succeeded in writing a most useful book, and one which the practitioner or specialist may consult with confidence and reliance.

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D., F.R.C.P.Ed., Professor of Pathology, University of Glasgow; and JAMES RITCHIE, M.A., M.D., B.Sc., Superintendent of the Royal College of Physicians' Laboratory, Edinburgh, formerly Professor of Pathology in the University of Oxford. Fourth Edition. With One Hundred and Seventy-one Illustrations. Edinburgh and London: Young J. Pentland. 1907. Cr. 8vo. Pp. xxi + 605.

FIVE years have elapsed since the third edition of this excellent manual was published. That issue was favourably reviewed in the number of this Journal for February, 1903 (Vol. CXV., Third Series, No. 374, page 106).

In that notice of the work we did not hesitate to criticise certain omissions from the text which we believed took from its value. We are gratified to find that everyone of those omissions has been rectified, and that the only suggestion we made apparently in vain was that a diagram or two would help the reader to understand the relation—in Ehrlich's side-chain theory of acquired immunity—of the immune body to the cell on the one hand and to the complement on the other (page 491).

This edition brings microscopic pathological research well up to date. In their Preface the authors truly say that, "in the case of several diseases which up till recent times have been investigated by purely bacteriological methods, there is now considerable evidence that the causal agent is of protozoal nature. Amongst such conditions the most important are those in which spirochætes are concerned, syphilis and the relapsing fevers being outstanding examples." They add—"As, however, the exact biological relationships of these organisms are still matters of dispute we have kept the diseases in question in the original arrangement"—that is, among the bacterial diseases. On this point, we think, the authors have shown an unnecessary timidity.

There is very little to criticise adversely in this book, but the use of "sera" grates upon us. In Latin "serum" means "whey." In bacteriology "serum" means a constituent of the blood-plasma—it is essentially an English word in this sense, and its plural, accordingly, should be "serums."

The "setting" of this manual is beyond all praise—the book is of handy size, beautifully printed on fine paper, and neatly bound.

An Atlas of Illustrations of Clinical Medicine, Surgery and Pathology. Compiled for the New Sydenham Society, chiefly from original sources. Fasciculus XXV. Small-pox. Fasciculus XXV., *bis.*, Variola, Vaccinia, and Varicella. Fasciculus XXVI. Eczema, Lichen, and Tinea, Gout Tophi, Darier's Dermatosis, &c. London: The New Sydenham Society, H. K. Lewis. 1906 and 1907. Folio.

These fasciculi are among the most valuable of those hitherto published by the New Sydenham Society under the heading of "The Clinical Atlas." The splendid series of plates illustrating small-pox in Fasciculus XXV. are, with one exception, prepared from photographs taken by Dr. Allan Warner, late Resident Medical Officer to the Isolation Hospital, Leicester. Plates I., J., K. and L. bear striking testimony to the appalling nature of confluent small-pox. They show, in sequence, the early vesicular stage of the rash on the third day—a herald of the coming confluent eruption; the early pustular stage on the sixth day, which was accompanied by intense itching and discomfort; the general appearance of the ill-fated patient on the tenth day; and the closing scene on the thirteenth day one hour before death. We were startled to observe that the third photograph, taken on the tenth day, showed the patient sitting bolt upright, supported no doubt by a nurse. "At this time the patient was quite helpless and aphonic. Temperature 105° F. Pulse rapid, much fœtor, muscular tremor and diarrhœa." Now, it seems to us that to make a patient in such a condition to sit up is to court disaster. It is conceivable that the effort might prove fatal there and then. If not, it would certainly shatter his little reserve of strength.

Nor does our experience tally with the statement that the prognosis in corymbose small-pox is "usually very grave." We know that this opinion was advanced by Marston many years ago.

The plates O. to S. illustrate "varioloid," or small-pox modified by vaccination. If the opponents of vaccination were open to reason (which they are not) we would recommend them to study these plates. One of them shows two boys, both aged thirteen years, who were infected from the same source on the same day. One of these boys had been vaccinated in infancy. He is seen to have had only one or two spots, which have already aborted and dried up. The other lad is in the fully pustular stage of a semi-confluent attack. The later plates show concurrent vaccine disease and small-pox—the latter disease has evidently been profoundly modified by the recent vaccination—twelve days before the onset of the disease.

In Fasciculus XXV., *bis.*, are a number of coloured portraits of patients suffering from small-pox, gangrenous varicella, and vaccinia with extensive superficial gangrene. The subject of the last named condition was a child who was admitted to the Richmond Surgical Hospital, Dublin, on February 17, 1880, under the care of the late Sir William Stokes, whose grandfather, Dr. Whitley Stokes, had described the affection at the beginning of the nineteenth century. The details of this interesting case were published by Sir William Stokes in the number of this Journal for June, 1880 (Vol. LXIX., page 497).

In the twenty-sixth Fasciculus there is a striking coloured illustration of the conditions present in "chalkstone gout" in an old man, inmate of a London workhouse, who had suffered during the greater part of his life from attacks of gout, as had his father also before him. The plate shows numerous tophi along the edge of the helix and the lower part of the antihelix in both ears, as well as the crippled and characteristically deformed right hand.

Darier's dermatosis forms the subject of two plates, illustrating the skin affection more correctly named by Hebra lichen scrofulosorum diutinum. Darier's supposed recognition of psorosperms (coccidia) is now regarded as an error. The bodies so named are not parasitic, but result from vacuolation, and indicate very chronic degenerative changes in a skin affection, characterised by the formation of indolent lichenoid papules, which is definitely in association with tuberculosis.

The excellence of these instalments of the Clinical and Pathological Atlas should avert the crisis which threatens the continued existence of the New Sydenham Society. Lack of support by the medical profession means want of funds to carry on the work of this useful Society, which this year celebrates its Jubilee, since it was instituted in 1858.

Prostatic Enlargement. By CUTHBERT S. WALLACE, F.R.C.S.; Surgeon to East London Hospital for Children. London: Henry Frowde; Hodder & Stoughton. 1907.

IN the 200 odd pages of Mr. Wallace's book we have been able to find much useful information, few inaccuracies, and a great deal of original observation and work. The size of the volume is somewhat misleading on account of the thickness of the paper and the number of illustrations. The early chapters on the morbid and surgical anatomy of the prostate are too long, and many of the details would find a more appropriate place in text-books of anatomy and physiology. It is refreshing to note, however, in these early pages, and all through the book, the absence of ambiguity as regards the prostatic "capsule." Mr. Wallace makes it quite clear when he speaks of the cortex, when of the normal fibrous sheath, and when of the adventitious covering of a benign growth. Heretofore it was usual to describe these structures indiscriminately as the prostatic "capsule."

Again, having regard to the many artificial and extravagant descriptions of the prostate devised by anatomists, and calculated to embarrass surgery, it is a relief to find the author denying the existence of a "middle lobe," since the so-called central portion of the gland has no lateral boundaries.

Amongst the many observations of the author the effect of vasectomy on the size and weight of the prostate are of surgical interest, and confirm the experiments of Guyon—"In no single case was there any decrease in size or atrophy of the prostate."

The question of sphincteric control of the bladder is of special importance in relation to the operation of prostatectomy, but it is not sufficiently dealt with, and the various references to the internal sphincter of the bladder give the erroneous impression that it is a well-developed muscle on the integrity of which much depends.

The chapters on diagnosis and treatment of prostatic enlargement are written in too meagre a manner, and the detailed descriptions, which are in such abundance in the sections on anatomy and pathology, are absent in this part of the book. Bare mention is made of the advantages of performing prostatectomy in two stages and the effects of this procedure on hæmorrhage and sepsis.

So far as it goes the book, with the exception of the index, is concise and reliable, but in future editions we hope the author will replace some of the early pages with more elaborate descriptions of the various operations, instruments and after-treatment. Place might also be found for a chapter on the complications arising as a result of an enlarged prostate and the effect of the latter generally on the urinary tract.

A Manual of Diseases of the Nose, Throat and Ear. By E. B. GLEASON, M.D., LL.D., &c. Philadelphia and London: W. B. Saunders Company. 1907.

ANOTHER Manual of Nose, Throat and Ear Diseases has been added to our list, and, with regret, it must be said that it does not add to our knowledge. It is difficult to find many original statements, and it is to be regretted that many of the pictures place instruments, &c., in impossible positions, as, for instance, figure 105, page 174—the conchotome passes out of the middle of the nasal bones—a rather difficult position to place it in, during life. The author does not suggest the usual method for opening an abscess in quinsy (see page 218), and the book is redundant with a large number of pictures of instruments which are of doubtful value.

It is hardly possible to put into a manual of this size a full description of affections of the nose, throat and ear, and though, from the general practitioner's point of view, it is convenient to have one book for all three subjects, it is questionable whether the information is really more easily arrived at than in the case of a larger work.

The most useful portion of the work is that relating to formulæ and remedies, at the end, where each formula has a small note appended, describing the idea in the composer's mind, and how best it may be used.

Sixth Report of the Cancer Research Laboratories, Middlesex Hospital. London: Macmillan & Co. 1907.

OF the papers appearing in the Sixth Report of the Cancer Research Laboratories of the Middlesex Hospital the most interesting is probably that on the trypsin treatment. This treatment was tried by Walter Ball and Fairfield Thomas in eleven cases. Of these two only received partial treatment, but the remaining nine were treated as fully as possible, according to the method recommended by Dr. Beard, of Edinburgh, by increasing hypodermic injections of trypsin, usually alternated with amylopsin. Six of these patients received injections for periods varying from 66 to 118 days. Of these, at the time of writing, two had died, one was sinking fast, and three were still living. Nevertheless, in the case of two of these the weight had decreased, while in the third it was stationary. The conclusion arrived at is that the course of cancer, considered both as a disease and as a morbid process, is *unaltered* by the administration of trypsin and amylopsin.

Dr. Archibald Leitch reports the result of the examination of the *bacteria* present in 33 tumours. Pieces of tissue were removed aseptically and placed in tubes of broth, in many cases with practically no possibility of chance infection; in others, when the tumour had been removed some hours or had surface ulceration, with the probability of contamination. In all 403 such tubes were made, in 86 of which a particular coccus, whose characteristics are described, was discovered; 192 were sterile, the remainder being contaminated. This coccus was found irregularly distributed in practically all the carcinomata and sarcomata examined, as well as in implanted mouse tumours, and a fibromyoma of the uterus. It differs little from most strains of *Staphylococcus albus* or the *Micrococcus neoformans*, except in some minor points, such as the rate of liquefaction of gelatin; it is not pathogenic to rats. The chief interest of the investigation seems to lie in the presence of a particular organism in these tumours, in positions which have usually been considered free from any bacteria.

L. Courtauld discusses the question of the origin of vascular endothelium, in the hope of throwing some light on the source and nature of the endotheliomata. The chorionic villi of an early human embryo were chosen as suitable for the study of endothelium in growing blood vessels. He comes to the conclusion that it is certain that the vascular endothelium—and, indeed, all the components of the blood vessel—as seen in the chorionic villus, are of mesoblastic origin.

Papers are also given on the specific gravity of certain tissues in malignant and non-malignant disease; on the connective tissues in squamous cell carcinoma, and certain pathological conditions which may precede its onset (leucoplakic conditions); on methods of preserving museum specimens; and very fully, by Lazarus-Barlow, on the relation between certain substances supposed to have some ætiological connection with cancer (paraffin wax, pitch, soot, gall-stones and clay pipes) and recognised radio-active substances.

What to do in Cases of Poisoning. By WILLIAM MURRELL, M.D., F.R.C.P., Physician to the Westminster Hospital. Tenth Edition. London: H. K. Lewis. Royal 32mo. 1907. Pp. viii + 280.

A MOST useful little book, which has reached its tenth edition. The author introduces it to his readers with a curious dedication and a still more curious preface. The dedication runs thus—"This work is dedicated to the Coroners of England with many apologies for the pecuniary loss they must have sustained from its publication by the author." We forbear to quote the preface, suffice it to say that Dr. Murrell appears to be a very grim humourist indeed.

The section on chronic poisoning is especially valuable. But we cannot accept the author's too dogmatic statement (page 242) that "there are two causes of morning vomiting—drink and pregnancy. When pregnancy can be excluded, alcoholism is the alternative diagnosis." Other drug-habits besides alcoholism and certain displacements of the womb in addition to pregnancy are attended by morning vomiting.

Practical Anæsthetics. By H. EDMUND G. BOYLE, M.R.C.S. Oxford Medical Manuals. Oxford: Henry Frowde, Oxford University Press. 1907. 8vo. Pp. viii + 178.

SEVERAL of the Examining Boards in England have now decided to make a course of practical study in anæsthetics obligatory on the medical student, and, apparently as a result, the medical publishers have produced quite a crop of small manuals dealing with the subject of anæsthetics. Mr. Boyle states that the object of his book is to furnish a short guide to those who have not the leisure to study such valuable works as those of Hewitt and Gill, but we cannot say that we have found the book any improvement on the many other small manuals already in use. We quite recognise the great difficulty there is in dealing in a short manual with so very complicated and practical a subject as the administration of anæsthetics, but if we are to have short manuals this difficulty should be faced and overcome, and if this cannot be done the production of these manuals should be given up. In the book before us the rules given for the induction of anæsthesia by the various methods in general use are on the whole admirable, but we are not at all so well pleased with the other parts of the book. It would have been a great advantage, we think, if a much more detailed consideration had been given to the important question of asphyxia or the limitation of the oxygen supply during anæsthesia. This we look on as a matter of fundamental importance in all forms of anæsthesia. If one fully recognises the importance of this idea and develops it in his practice he will obtain a much better class of anæsthesia and avoid the great majority of dangers usually associated with its induction and maintenance. With ether more than in any other form of anæsthesia will the results be conspicuous, and the administrator will find that he can with this drug obtain as uniformly good results, both for the patient and operator, as he can with the use of chloroform. We are not, we must confess, quite in accord with our author in all his directions as to the selection of the anæsthetics, but quite recognise that individual experience will lead to different conclusions. We must, however, protest against our author attributing the result in the illustrative case stated on page 147 to Providence rather than to the promptness of the surgeon.

The book will be useful to the beginner if it stimulates his interest to deeper studies, but its teaching will not by itself, we fear, make him a competent anæsthetist.

T. P. C. K.

A System of Radiography, with an Atlas of the Normal. By W. IRONSIDE BRUCE, M.D.; Physician to the X-ray and Electrical Departments, Charing Cross Hospital; Hon. Radiographer to the Hospital for Sick Children, Great Ormond Street. London: H. K. Lewis. 1907. Pp. xi + 110.

THE aim of the "System of Radiography" is to facilitate the interpretation of radiograms showing abnormal conditions, by providing for comparison an atlas of the normal X-ray appearances of various parts in the body.

The work is introduced by an illustrated description of the couch and tube holder used by the author, Dr. Bruce. The patient lies on the canvas covered couch, underneath which is placed the tube. A plumb-bob above the patient indicates the position of the anode below. The illustrations are arranged in groups of four. The first of these is a photograph showing the position of the patient on the couch and the relation of the anode to the part radiographed. The next three illustrations are the resulting radiograms, and demonstrate the appearance of the part at the ages of 5, 15, and 25 years.

The Atlas contains 108 illustrations. These deal, in a fairly complete manner, with every part of the body. A view, from before backwards, of the shoulder-joint and an oblique view of the chest might have been added with advantage. But it may be pointed out that in injuries and pathological conditions, especially of joints, it is often impossible to obtain radiograms in the ideal positions depicted in the Atlas.

Dr. Bruce rightly lays great stress on the fact that radiograms of the bones of the body should be taken (as they are in the Atlas) with the tube in determinate anatomical relation to the part. But in spite of this he is sometimes vague in describing this relationship; nor does he make any mention of the distance of the anode from the plate, an important factor in comparing radiograms. As far as the radiograms themselves are concerned, they are all good, and some of them could hardly be better. They possess the advantage of not being retouched or altered in size, and are well reproduced. But the photographs showing the position of the patient are poor, and lack detail.

Dr. Bruce's "System of Radiography" is, on the whole, a decided success, notwithstanding the defects and limitations pointed out above. The Atlas is convenient in form, very well edited, and the general arrangement of the illustrations is excellent.

The Practical Medicine Series. Vol. III. The Eye, Ear, Nose and Throat. Edited by Drs. Casey A. Wood, Albert H. Andrews, and Gustavus P. Head. Series 1906. Chcago: The Year-Book Publishers. 1907. 8vo. Pp. 368.

The volume before us is one of ten similar volumes comprising the year's progress in medicine and surgery under the general editorial charge of Dr. Gustavus P. Head, who also individually edits the Nose and Throat Section.

It is, of necessity, scrappy, but very interesting, and easily read. Short bits are extracted from the authors' papers and writings, and there is an occasional note by the compiler, for clearness sake, with the references given at the bottom of each page—a plan which is much better than a long list of references given at the end of the book.

It would be out of place, in a review, to cull pieces out of the work, but everything worth recording, during the year, seems to have been mentioned, and it is of real use to skim through; for then, if one finds that he has missed a good article, he can at once get it, and read up the whole subject with ease.

Most of the former Year-books mixed up everything together, but, at last, we have one which deals with each subject separately. Consequently, without an extraordinary amount of reading, the reader can at once refer to his own department.

Most of the references are from American and German authors, but the British writers have not been forgotten.

The series is one which should be of very great value in enabling one rapidly to look up the latest publications on each subject, and as each volume contains a fairly full index, both of subjects and of authors, the series forms a most valuable library of reference to the special literature of all languages.

The Editors do not aim at making the volume contain a complete list of all the papers published on each subject, but they use a wide discretion in abstracting only those which they consider most suitable, as the modest dimensions of each volume renders such pruning and weeding operations necessary; but though not complete as regards authors it is fairly complete as regards subjects.

There are a fair number of illustrations, good, bad, and indifferent, many of which are unblushing advertisements for the Chicago instrument makers.

With careful editing this series should supply a much-felt want to the English-reading members of the medical profession, both at home and abroad.

Diseases of the Male Generative Organs. By. EDRED M. COMER, F.R.C.S.; Surgeon to Out-patients, St. Thomas' Hospital. London: Henry Frowde; Hodder & Stoughton. 1907.

THIS is one of the Oxford medical manuals, with the general appearance and form of which, the enterprising publishers have made the profession familiar during the last few months. The writer points out in his preface that he has of set purpose, wisely, we think, omitted the consideration of diseases of the prostate, and also the extra-genital complications of gonorrhœa and syphilis. He has succeeded in writing a very readable little book, sufficiently full to be of use for reference to the practitioner, and yet unburdened with anything that is not of practical value. With most of his views we are in agreement, but we frankly disapprove of some of the statements on pages 164 and 165. The discussion of varicocele and its operative treatment is instructive. The book is illustrated by diagrams, which are far more useful in a work of this sort than more elaborate drawings.

Procédé de Momification Intégrale des Cadavres. By GIOVANNI CHIARELLA. Rome: Imprimerie Editrice Romana. Via della Trezza 59–61. 1907.

THE author of this extremely neat and beautifully printed pamphlet of 36 pages herein announces an interesting invention, or discovery. Indeed, it is one which cannot fail to appeal to the very best feelings of collective humanity throughout the world. He tells us that the death of his father many years ago inspired him with the dream of his life-long ambition—that of preserving the mortal remains of the dead from the ravages of putrefaction, while maintaining the absolute entirety of the body, even to avoidance of the smallest breach of continuity in either mucous or cutaneous surface. And the complete attainment of this consummation is here announced; corroborated, too, by what would appear to be unimpeachable, official, professional, scientific and journalistic testimony and expression of opinion. One of these is signed: Prof. Roberto Alessandri, Prof. de Pathologie à la Royale Université di Rome, Chirurgien-en-Chef des Hopitaux de Rome; and, after describing the satisfactory condition of each of three bodies which he had examined—all of which had been treated by our author—concludes with the following sentence:—"De toute façon, le résultat est certainement excellent, et il est à souhaiter que le procédé Chiarella puisse se prouver apte aux multiples applications pratiques et scientifiques auxquelles il peut servir."

The author thus describes his procedure—in a very general way, only: "L'application de mon procédé est bien simple:

le cadavre, intact, est immergé en sa forme intégrale dans le liquide de ma préparation ; dans ce bain on le laisse immergé pendant quatre ou cinq jours. Dès le commencement de l'opération, le liquide, non seulement arrête dans le cadavre tout procédé de putréfaction et d'infection, mais encore, par sa présence seule, il purifie l'ambient saturé d'éléments malsains la puissance de ma préparation chimique désinfecte l'air, détruit les microbes, rend l'ambient pur et sain." And the argument in favour of its adoption is made to embrace aspects of the question which appeal to the utilitarian and scientific judgment of the twentieth century critic and political economist : "Et ces effets, réellement d'utilité publique au point de vue de l'hygiêne, ne sont pas momentanés : ils sont constants, durables, éternels même, oserions-nous dire. Aujourd'hui, les cadavres enterrés, en se putréfiant, en se dissolvant, produisent des myriades de microbes, qui invisiblement envahissent l'air et le corrompent ; ils se propagent, ils s'épandent au loin, pénêtrent partout. Nôtre procédé, en prévenant, en arrêtant la putréfaction, la dissolution, rend les cadavres inoffensifs, hygiéniquement parlant : plus de putréfaction, plus de dissolution ; donc, plus de microbes, plus d'infection." According to this programme, then, the cosmopolitan adoption of the Chiarella process would leave little further employment for either physician or bacteriologist—while that of the undertaker would progressively diminish, to end at last with that of the mummifier himself ! The sting of death will then be but a matter of antiquarian history—without historian to chronicle, or antiquarian to discuss, its formerly absolute powers and terrorising phenomena ! But we will indulge in this prophetic strain of speculation no further ; lest we involve our readers, as well as ourselves, in future disappointment. The date of ultimate realisation of the vision thus called up is very probably still remotely placed in a far away future.

Our author does not give the composition of his mummifying liquid. He, however, offers pictorial illustrations of three of his results, as obtained in treatment of the human cadaver. These have been obtained during the past few months. But some of his experiments on flesh of various lower animals (in fragments), of entire bodies of birds, and of fish, are now over

two years old. "Après deux ans ces momifications ne présentent aucun symptôme de dépérissement ni d'altération; la forme, le coloris sont intacts; aucune odeur. Un jour j'ai éventré un oiseau momifié par moi deux ans auparavant; j'en ai trouvé les intestins pétrifiés 'pétrifiés' n'est pas le mot, non, je les ai trouvés en l'état où ils devaient se trouver au moment de la mort, si j'avais éventré la petite bête aussitôt après. Bien plus, dans les bêtes momifiées les aliments étaient restés tels que s'ils renaient d'être avalés par ces petites bêtes avant leur mort; aussi ils avaient conservé leur coloris et leur forme."

The writer's claims would thus seem to be strongly borne out by existing facts. As the subject is one of very human interest, indeed, we shall look out for further corroboration. The discoverer of a reliable means of preventing decomposition of the body after death will receive the gratitude of all future generations—more especially when all tampering with its integrity has been wholly eliminated.

The Clinical Use of Prisms and the Decentring of Lenses. By ERNEST E. MADDOX, M.D. Fifth Edition, revised and enlarged. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. 1907. Pp. 205.

IT is eighteen years since the first edition of this most excellent work supplied a much felt want. The Book has passed through successive editions, each one an improvement on the last, till the present edition brings the subject up-to-date and fully justifies the widespread popularity which this standard work has enjoyed so long and still enjoys. Excellent in 1898, most excellent in 1907.

In the present edition an account has been added of some new instruments—the "Prism-verger," the "Duant," the "Spirit-level Prismeter," and a means of measuring hyperphoria in near vision.

As we have had four previous opportunities of giving reviews of this book we need not at present go further into detail than to state that the fifth edition is written in the same lucid style, simple English, and intelligible manner which made and has kept the previous editions in the forefront of readable works on abstruse subjects.

PART III.

SPECIAL REPORTS.

REPORT ON MEDICINE.

By Henry T. Bewley, M.D.

I. FORMIC ACID IN THE TREATMENT OF DIPHTHERIA.
II. ATROPIN IN THE TREATMENT OF ASTHMA.
III. THE USE OF ARSENIC IN PNEUMONIA.
IV. THE LOCAL USE OF MAGNESIUM SULPHATE IN INFLAMMATION.
V. BARIUM CHLORIDE AS A HEART TONIC.
VI. ON SYPHILIS OF THE LUNGS.
VII. RECOVERY FROM TUBERCULAR MENINGITIS.
VIII. THE FREQUENCY OF ALBUMINURIA AFTER SCARLATINA.
IX. ACUTE PULMONARY ŒDEMA.
X. TYPHOID FEVER AFFECTING THE KIDNEYS.
XI. SALIVATION IN CHOREA.
XII. A URINARY TEST FOR WORMS.

I. FORMIC ACID IN THE TREATMENT OF DIPHTHERIA.

Drs. Kerr and Croom call attention to the value of formic acid as a powerful stimulant of striped muscle. It is efficacious in dispelling sensations of fatigue and in increasing muscular power. It has been used in various conditions of weakness.

Kerr and Croom undertook this method of treatment in order to note its effect on heart failure and on post-diphtheritic paralysis. It was thought that it might tend to prevent the occurrence of heart failure. During 1906 it was given systematically to all patients, from 5 to 20 minims of a 25 per cent. solution being administered every four hours. The dose was graduated more according to the severity of the case than according to the age of the patient. Under its action the pulse seemed less liable to weakness and irregularity than might have been expected, and the patient's colour improved. No bad effects were noted. Their results are expressed by the following table :—

Year	No of cases	Deaths Per Cent.	Fatal heart failures Per Cent.	Paralysis Per Cent.	Albuminuria Per Cent.
1905 (No formic acid)	507	8·0	3·07	9·09	23·7
1906 (Formic acid)	412	6·2	1·94	2·9	15·7

While they cannot claim any great improvement as regards total mortality or heart failure, they note, with interest and surprise, the great diminution in the percentage of paralysis. Diphtheritic paralysis is generally regarded as of nervous origin ; if so, how can it be affected by a muscle tonic ? They suggest that it may be that the general improvement in nutrition so affects the nerves that their tendency to disease is lessened, or that the muscles may be primarily affected. The diminution in the amount of albuminuria is also striking. In any case the treatment seems promising.—*Ed. Med. Jour.*, June, 1907.

II. ATROPIN IN THE TREATMENT OF ASTHMA.

An extraordinarily prompt action of atropin in asthma is recorded by G. Zuelzer (*Therapie der Gegenwart*, September, 1906 ; *Berliner klinische Wochenschrift*, January 28, 1907). Almost immediately after the subcutaneous injection of a milligramme of the drug the area of pulmonary resonance is reduced by from three to five finger breadths, and the subjective sensations promptly subside. In a great majority of cases this remedy has shown itself of great value. Its action is explained by its paralysing effect on the pneumogastric nerve. Though, in experiments on animals, irritation of the vagus has been found to give rise to muscular spasm of the bronchi and to pulmonary distention, such results do not follow if atropin has previously been injected.—*N. Y. Med. Jour.*, March 30, 1907.

III. THE USE OF ARSENIC IN PNEUMONIA.

Dunn (*N. Y. Med. Jour.*, December 1, 1906) records ten cases of pneumonia which occurred about the same time, and in which arsenic was given in large doses with very favourable results. Enormous doses were tolerated in a surprising manner; 5 minims of Fowler's solution were given every two or three hours for several days without the slightest evidence of poisoning. In many of the cases the temperature fell decidedly about forty-eight hours after the commencement of medication, and the course of the fever was shorter than is usual.

IV. LOCAL USE OF MAGNESIUM SULPHATE SOLUTION IN INFLAMMATION.

Tucker finds that local application of magnesium sulphate rapidly relieves local pain. He has used such application in numerous cases of gonorrhœal epididymitis and orchitis, and finds that the pain is relieved in a few hours. It is not necessary to confine the patients to bed in every case, nor was elevation of the testicles used except to prevent the soiling of the bedclothes. In three cases of gonorrhœal rheumatism the pain was promptly relieved by the local applications, and they may also be used in local sprains and simple contusions. The salt is used in a saturated solution applied on from 15 to 20 thicknesses of ordinary gauze. This is kept saturated by renewal every half-hour at least, to prevent drying up. The gauze is not removed until the end of twenty-four hours. The parts are then washed with water, and the dressing is re-applied if indicated. There is then found a marked blanching of the superficial structures, which is not followed by any deleterious effects. The attendants who make the application complain that it causes a partial loss of sensation, accompanied by tingling of the hands and arms, which persists for twelve to twenty-four hours.—*Therap. Gaz.*, Phila., 1907, April, and *Ed. Med. Jour.*, July, 1907.

V. BARIUM CHLORIDE AS A HEART TONIC AND DIURETIC.

From the investigations of Schedel, in 1903, made upon patients suffering with grave cardiac lesions, this observer stated that barium chloride was even superior to digitalis in regulating the pulse and blood pressure and increasing the functional activity of the kidneys. Following this publication, a number of other clinical observers gave the result of their personal experience with this drug, in which, while the action as a heart tonic was admitted, the authors refused to recognise the same action as digitalis. Recently Pesci (*La Riforma Medica*, Naples, April 6, 1907, and *La Clinique*, Paris, July 26, 1907) has given the conclusions derived from further investigation as follows:—(1) Barium acts as a muscular excitant; (2) the therapeutical dose of barium chloride is 20 to 25 centigrammes (grs. iii–iv) daily, which quantity in man produces an increase in the arterial tonicity; (3) toxic doses exercise a profound action upon the myocardium and arrest the heart in systole; (4) its influence is exercised directly upon the muscular fibre without the intervention of the nervous system. In ordinary doses, according to medications, barium chloride is perfectly tolerated by the system, and may be given in the therapeutical dose for ten days at a time. The dose may even be increased from 0.20 to 0.25 to 1.50 or 2 grammes daily, without causing nausea or vomiting like caffein; or gastrointestinal disturbances, like digitalis; or renal troubles, like calomel and the balsams. The author calls attention to a possible danger of unduly increasing the blood pressure. During its administration its effects should be watched so as not to cause too great vascular tension, and especially large doses should not be given when the myocardium is weak. The diuretic effects of the drug were very noticeable in fifteen cases of pleuritic effusion, in which Pesci considers barium chloride to be the best, or most inoffensive, diuretic.—*N. Y. Med. Jour.*, Aug. 31, 1907.

VI. ON SYPHILIS OF THE LUNGS.

In the *Liverpool Medico-Chirurgical Journal*, July, 1907, there are four papers on this rare form of disease. We also note that Dr. Beriel (Paris) has published a work on this subject (Rev. in *Birm. Med. Jour.*, June, 1907). Syphilis occurs in several forms in the lungs, but the form chiefly alluded to in these papers is syphilitic phthisis. It forms a picture hard to diagnosticate from tubercular phthisis. The following points are of importance :—

1. History of syphilitic infection or the presence of lesions elsewhere.

2. Absence of tubercle bacilli (it must be borne in mind that the two diseases may co-exist).

3. Dyspnœa generally greater than can be accounted for by physical examination. This is a prominent feature in this disease.

4. The locality affected. There is no special predilection for the apex; in fact some observers consider that the root of the lung, the middle lobe, and the central portion of the lower lobe are the parts most likely to be attacked.

5. The effect of treatment. If the case has not advanced too far the prognosis under antisyphilitic treatment is good. It has been also noted that if iodide of potassium be administered to tubercular patients the number of râles in the lungs is generally increased; while in syphilitic disease this does not occur.

VII. RECOVERY FROM TUBERCULAR MENINGITIS.

Hougardy (Liège) records such a case. A boy, aged ten years, had suffered for several months from a cough, and had spat blood, but these symptoms had abated. Then convulsions came on, and cutaneous hyperæsthesia; the neck was rigid and the belly concave. The eyes were fixed, the pupils unequal and insensible to light. The respiration was stertorous, the pulse small and very rapid, and the temperature 105.4° F. There was no albuminuria, but Ehrlich's reaction was shown. The diagnosis was confirmed by lumbar puncture, which showed not only a supertension and lymphocytosis in the cerebro-spinal fluid, but also the tubercle bacillus.

The only treatment consisted in nutritive enemata, with a small hypodermic injection of morphin at night, to relieve restlessness, and lumbar puncture repeated every two or three days. The symptoms slowly yielded and the temperature fell by lysis for nearly a week, and then was subnormal for two days. At the end of three weeks the child recognised its mother, and began to talk intelligibly. Another lumbar puncture, a few days later, still revealed an excess of lymphocytes, but showed no tubercle bacilli. The child's condition continued to improve in a most satisfactory manner, and when presented he had been entirely free from morbid manifestations for nine months. His intelligence was intact and his motor functions and special senses were normal.

This case, and also another case of the same disease in which recovery occurred after the same treatment, emphasise the value of lumbar puncture as a therapeutic agency.—*N. Y. Med. Jour.*, June 29, 1907.

Riebold emphasises the therapeutic value of lumbar puncture. He gives the following rule respecting the frequency with which the puncture should be repeated:—If the initial pressure of the cerebro-spinal fluid is equal to 25 or 30 centimetres of water, and if after 25 or 30 cubic centimetres have been removed the pressure still reaches 10 or 12 centimetres, the puncture should be performed daily; symptoms of cerebral pressure and headache also call for frequently repeated puncture. On the other hand, if the temperature sinks, and if the amount of albumin in the cerebro-spinal fluid diminishes, it may be inferred that the inflammatory exudation is lessening and that the punctures need not be so frequent.—*Münch. med. Wchschr.* 35. 1906.

VIII. THE FREQUENCY OF ALBUMINURIA AFTER SCARLATINA.

In a paper on albuminuria, Heywood records some interesting observations undertaken to ascertain whether scarlatina produces any permanent effect on the kidneys. He examined the urine of thirty-nine children who had had scarlatina from one to four years previously; in thirty-six of the cases there never had been either dropsy or uræmia, in three the history could not be satisfactorily obtained. All the children at the time of examination appeared to be perfectly well. The tests used were nitric acid, and heat and acetic acid. In nineteen cases albumin was found; in four cases it was of the orthostatic type, appearing soon after the erect posture was assumed and disappearing on lying down. In eight it was cyclic in type, being found only in the middle of the day. In one case albumin was always present, and in six it appeared irregularly. The conclusions he draws are as follows :—

1. About 50 per cent. of children, who have passed through an attack of scarlet fever, suffered from residual albuminuria.

2. Residual albuminuria is not a purely transitory affection, as the percentage of albuminous cases is about the same for those tested during the first year and for those tested during the second and third years.

3. Early and late residual albuminuria do not differ much in type.

4. The younger the child is, when attacked by scarlet fever, the less liable is he to suffer from residual albuminuria.

5. Sex does not appear to affect the incidence of residual albuminuria.—*Med. Chron.*, June, 1907.

IX. ACUTE PULMONARY ŒDEMA.

Riesman contributes a paper on this subject to the *Am. Jour. of Med. Sci.* His conclusions are as follows :—

1. There is an acute pulmonary œdema that comes on without any apparent exciting cause, and often kills in a short time.

2. Recovery from an attack is frequent; but there is a striking tendency to recurrence, subsequent attacks being similar to the first. They set in suddenly, usually at night, and place the patient's life in jeopardy.

3. The clinical causes are various; arterio-sclerosis and cardiac and renal disease are most important.

4. The pathogenesis is obscure; vaso-motor disturbances and a disproportionate activity of the two ventricles (the right predominating) are the chief factors.

5. The chief symptoms are agonising dyspnœa, cyanosis, cough, expectoration of frothy albuminous fluid, and profound prostration. Over the lungs, often more over the upper than the lower portions, the characteristic moist râles of œdema are heard.

6. The most valuable remedies are bleeding, dry cupping and cardiac stimulants.

7. The condition is of sufficient importance to warrant its having a special chapter in the text-books of medicine.—*Scot. Med. Jour.*, July, 1907.

X. A CASE OF ENTERIC FEVER IN WHICH THE ACTION OF THE TYPHOID VIRUS WAS DIRECTED MAINLY TOWARDS THE KIDNEY.

Drs. Napier and Buchanan (Glasgow) record an instructive case. A young man was ill for three weeks before consulting a doctor, during which time he had a cold, and the urine became red for a time, and then regained its normal appearance. When examined his temperature was high, varying from 102° to 105°; his urine was scanty and contained blood and albumin in large quantities, in fact presented all the characters of the urine of acute nephritis. In it were found enormous numbers of typhoid bacillus in pure culture. The blood gave Widal's reaction, but there were no other signs of enteric, and the fæces did not contain typhoid bacilli. The case made a slow but satisfactory recovery, and it is important to note that typhoid bacilli were found in the urine for quite four months from the onset of the illness.

Noteworthy points are that acute Bright's disease may be caused by the typhoid bacillus, and that the urine may be capable of conveying infection for as much as four months. Urotropin was given for months, but with no apparent effect.—*Glasgow Med. Jour.*, Dec., 1906.

XI. SALIVATION IN CHOREA.

Price (Philadelphia) calls attention to the rarity in chorea of the occurrence of an excessive secretion of saliva associated with constant dribbling, and mentions three cases in which this symptom was present. All these cases were severe, and the tongue and the jaw-muscles were affected by the choreic movements. He believes the symptom to be of purely mechanical origin, the movements of the tongue and muscles of mastication exciting the salivary glands to increased activity, and the involvement of the tongue, jaw, palate, and pharynx so interfering with swallowing that the saliva is retained in the mouth, or dribbles from the corners.—*N. Y. Med. Jour.*, April 27, 1907.

XII. A URINARY TEST FOR HELMINTHIASIS.

A Russian physician, Dr. Iéfimov (*Vratchébnaya Gazeta*, 1906, No. 43; *Bulletin médical*, November 14th), affirms that he has discovered a sure sign of the presence of intestinal worms. From five to ten cubic centimetres of fresh urine (which need not be filtered unless it is turbid) should be boiled in a test tube, and from five to ten drops of the official solution of acid nitrate of mercury added. If the individual is free from worms, the urine becomes milky and deposits a white precipitate ; if he has worms, the precipitate is grayish or blackish—darker if the parasite is a tape-worm, lighter if it is a round worm, though the difference is not decided enough to be diagnostic. It must be ascertained that the person has not recently taken an alkali, a sulphur compound, Dover's powder, certain preparations of iron, or any compound of lead, for any of these may enable the mercurial to throw down a similar precipitate. Dr. Iéfimov supposes that the reaction is due to a toxin elaborated by the parasite, absorbed into the blood, and finally eliminated in the urine.—*N. Y. Med. Jour.*, Dec. 29, 1906.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1908, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and must be received by the Secretary of the College, Thomas R. Neilson, M.D., on or before May 1, 1908. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College ; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1907 has been awarded to Dr. William Louis Chapman, Providence, R.I., for his essay entitled "Post-Operative Phlebitis, Thrombosis, and Embolism."

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—J. Magee Finny, M.D., F.R.C.P.I.
General Secretary—James Craig, M.D., F.R.C.P.I.

SECTION OF PATHOLOGY.

President—A. R. Parsons, M.D.
Sectional Secretary—Professor A. H. White.

Friday, October 25, 1907.

The President in the Chair.

The Nitrogenous Metabolism in a case of Myelogenous Leukæmia.

The President read a paper on the above subject.

Dr. Walter Smith said it was not usual to discuss the Presidential Address, but he thought it would be unbecoming to pass over without remark a paper which marked a departure in the transactions of the Section. It was a courageous attempt to investigate one of the darkest corners of pathology, the full investigation of which would tax the resources of the most skilled chemist. It was no disparagement of the paper to say that it did not lead to any definite conclusion. The same might be said of the general literature of the subject; and it might be safely asserted that up to the present chemical investigation failed to throw any light on the cause of leukæmia. The subject, moreover, was only part of the much larger subject of the general effect of diseases of the blood on metabolism, the metabolism generally taking the direction of catabolic destruction. Before they could get any general light on the subject they must take into consideration other affections, such as gout with its uncertain relations to uric acid. More important than even the serious loss of proteins which had been observed in very acute cases of leukæmia, but not definitely in the chronic cases, was the question whether there was any distinction to be drawn, chemically or otherwise, between lymphatic and myelogenous leukæmia. There was, at any rate, one curious difference in regard to the nature of the cells that were found predominating in the two forms. Generally speaking, comparing the leucocytes with the large neutrophile cells, they were distinguished by a lesser chemical activity, and it would almost seem as if the chemical activity of the leucocytes in the normal body was held in check by anti-enzymes in the blood. They had become familiar with the doctrine that probably every cell in the body was, as it were, capable of eating itself. The chemical changes in the blood were so diverse that it was almost impossible to throw any light on the subject. All sorts of extraordinary things had been reported as existing in the blood. The xanthin bodies were well represented in the blood of leukæmia, but there were other bodies which might be *post-mortem* products. The solid exudate in acute pneumonia underwent resolution with puzzling rapidity; that was probably due to autolytic action, and we might probably look in that direction for the explanation of unresolved pneumonia. Dr. Parsons had been unable to trace any connection between uric acid and the leucocytes in leukæmia, and the fact that nitrogenous bodies in contact with the blood might furnish non-nitrogenous products showed how cautious they should be in interpreting the results of nitrogenous metabolism.

Dr. Magee Finny said the subject opened up a great range for discussion. The practical point as to the X-rays being one of the great causes of improvement, if not the sole cause, was very important. It was not so long since the rays were only applied for diagnosis; cases in which they had been used as a means of therapeusis were not very numerous, and it seemed very remarkable that such results had been obtained in the case. A relationship between the elimination of uric acid and the white cells had not been found; that, however, was valuable negative information for future observations.

Dr. Parsons replied.

SECTION OF SURGERY.

President—Sir Henry Swanzy, P.R.C.S.I.
Sectional Secretary—Alexander Blayney, F.R.C.S.I.

Friday, November 1, 1907.

The President in the Chair.

Some Unusual Abdominal Cases.

Mr. Graves Stoker read a paper in which he gave the clinical history of a number of interesting abdominal cases. In one of these a woman, who had suffered for a number of years from almost incessant vomiting and extreme emaciation, and who had been considered by a late distinguished Dublin surgeon to be the subject of malignant disease of the stomach, obtained complete relief from her symptoms after an exploratory laparotomy in which the stomach was found to be quite normal. In another case, apparently of hydronephrosis, the patient, a woman, had the power of emptying the sac, the capacity of which was several pints, more or less at will.

Dr. Wheeler said all the cases showed points of interest; and spoke with approval of the results obtained through the adoption of the method of continual saline injection as practised by Murphy, of Chicago. The theory advanced by Murphy to explain the great improvement in his results was that the lymphatic circulation in the abdomen was reversed, and the saline pouring in prevented the toxins of pus going the other way.

A Case of Ligature of the Innominate Artery.

Sir Thomas Myles read a communication on this subject. In the course of his extremely interesting paper he described the symptoms and signs presented by a male patient, aged twenty-nine years, who suffered from a right subclavian aneurysm. He gave the reasons why he was led to reject treatment by Syme's method of opening the sac, followed by ligature of the artery on the proximal and distal sides, and also the treatment by distal ligature alone in favour of ligature of the innominate artery. The chief of these reasons was that the most frequent cause of failure in previous attempts—namely, secondary hæmorrhage induced by sepsis—could now almost certainly be prevented. Most of these operations had been carried out in the pre-antiseptic era, while Mr. Coppinger's case, which was brilliantly successful, was performed with strict antiseptic precautions. He then discussed the methods of approach to the artery, finally selecting a median incision in the lower part of the neck, the ligature being accomplished without either division of the sterno-mastoid, or resection of the inner end of the clavicle, or trephining the sternum. In addition to securing the innominate he placed a double ligature on the right common carotid dividing the artery between. He expressed the opinion that in carrying out this step he left too short a distance between the two ligatures, and that to this the failure of the operation was due. He then detailed the subsequent progress of the case, which was at first very favourable. The wound healed by the first intention, the pain caused by the aneurysm disappeared, and the patient felt very well. The pulsation in the aneurysm, however, persisted. About ten days after the operation a large subcutaneous hæmorrhage occurred, which was treated by reopening the wound and securing the bleeding vessel, which could not be identified. Subsequent hæmorrhages, however, took place necessitating further operations, which for a time checked the bleeding. The wound now began to suppurate, the hæmorrhages continued to take place, and, finally, the patient died about a month after the first operation. The *post-mortem* examination showed that the source of hæmorrhage was the carotid artery from which one of the ligatures had slipped.

MR. WILLIAM TAYLOR said there were, after all, only two reasons why success should not attend the effort to ligature the innominate artery—first, failure in the establishment of the anastomotic circulation of the brain; and, second, sepsis. One ought to be able to control the latter, and, therefore, should be able to control the secondary hæmorrhage. Yet they all knew how possible it was for some septic infection to creep in, and in Sir Thomas Myles's case it was just possible that there may have been some source of infection in the bottom of the wound in the deep structures. Barwell had drawn attention to the fact that death in such cases almost invariably arose from secondary hæmorrhage, and had stated that if ever he came to ligature the innominate artery he would ligature the vertebral artery as well as the innominate and carotid.

SIR THOMAS MYLES, in replying, stated his belief that the cause of failure was that the ligature on the common carotid had slipped.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by Sir John Moore.

Vital Statistics

For four weeks ending Saturday, November 2, 1907.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ending November 2, 1907, in the Dublin Registration Area and the twenty-one principal provincial Urban Districts of Ireland was 19.0 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,117,547. The deaths registered in each of the four weeks ended Saturday, November 2, and during the whole of that period in the several districts, alphabetically arranged, correspond to the following annual rates per 1,000. In some cases, owing to deaths not having been registered within the week in which they occurred, the rates do not fairly represent the weekly mortality :—

Towns, &c.	Week ending				Average Rate for 4 weeks	Towns, &c	Week ending				Average Rate for 4 weeks
	Oct. 12	Oct. 19	Oct. 26	Nov. 2			Oct. 12	Oct. 19	Oct.	Nov. 2	
22 Town Districts	19.8	19.7	20.0	19.0	19.6	Lisburn -	9.1	4.5	13.6	9.1	9.1
Armagh -	—	27.5	20.6	41.2	22.3	Londonderry	13.5	30.7	13.5	14.7	18.1
Ballymena	23.9	—	14.4	19.2	14.4	Lurgan -	4.4	17.7	13.3	13.3	12.2
Belfast -	22.1	19.4	23.2	20.4	21.3	Newry -	12.6	8.4	37.8	4.2	15.8
Clonmel -	10.3	35.9	20.5	10.3	19.3	Newtownards	22.9	22.9	17.2	17.2	20.0
Cork -	27.4	24.0	19.9	17.8	22.3	Portadown	15.5	20.7	10.3	10.3	14.2
Drogheda -	12.3	20.4	12.3	8.2	13.3	Queenstown	33.0	13.2	33.0	13.2	23.1
Dublin - (Reg. Area)	20.2	20.3	19.1	21.1	20.2	Sligo -	4.8	4.8	14.4	—	6.0
Dundalk -	16.0	4.0	12.0	8.0	10.0	Tralee -	10.6	15.9	15.9	15.9	14.6
Galway -	—	27.2	15.5	15.5	14.6	Waterford	23.4	25.3	17.5	15.6	20.4
Kilkenny -	14.7	—	24.6	—	9.8	Wexford -	—	18.7	9.3	23.3	12.8
Limerick -	20.5	13.7	19.1	23.2	19.1						

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 22 districts during the week ended Saturday, November 2, 1907, were equal to an annual rate of 2.0 per 1,000—the rates varying from 0.0 in thirteen of the districts to 13.2 in Queenstown, in which district both of the 2 deaths registered were from diarrhœal diseases. The 145 deaths from all causes registered in Belfast include 4 from measles, one from scarlet fever, 2 from diphtheria, one from enteric fever, 8 from diarrhœal diseases, and one from cerebro-spinal fever. Included in the 26 deaths from all causes in Cork are one from typhus and 4 from diarrhœal diseases. The 17 deaths registered in Limerick include 4 from measles and one from diarrhœa; and of the 2 deaths registered in Portadown one is from whooping-cough.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 390,691, that of the City being 300,850, Rathmines 35,606, Pembroke 27,854, Blackrock 8,759, and Kingstown 17,622.

In the Dublin Registration Area the births registered during the week ended Saturday, November 2, 1907, amounted to 216—112 boys and 104 girls; and the deaths to 169—88 males and 81 females.

DEATHS.

The deaths registered represent an annual rate of mortality of 22.6 in every 1,000 of the population. Omitting the deaths (numbering 11) of persons admitted into public institutions from localities outside the Area, the rate was 21.1 per 1,000. During the forty-four weeks ending with Saturday, November 2, the death-rate averaged 24.4, and was 0.7 below the mean rate for the corresponding portions of the ten years, 1897–1906.

The deaths registered in the week ended Saturday, November 2, included one from measles, one from scarlet fever, one from diphtheria, 2 from enteric fever, and 6 from diarrhœal diseases—in addition to one death from enteritis and one death from *gastro enteritis*, both of infants under one year of age. In each of the 3 preceding weeks, deaths from measles were one, 0, and 5; deaths from scarlet fever were 0, one, and 0; deaths from diphtheria were one, 0, and 0; deaths from enteric fever were 3, one, and 0; and deaths from diarrhœal diseases were 23, 15, and 8. The deaths of 2 persons were due to influenza.

The deaths from pneumonia (all forms) include one death from lobar pneumonia, 6 deaths from broncho-pneumonia, and 3 deaths from *pneumonia* (not defined).

Deaths from all forms of tuberculous disease, which, in each of the 3 preceding weeks, were 29, 32, and 26, numbered 28 in the period under notice. The latter figure comprises 7 deaths from tubercular phthisis, 9 deaths returned as from *phthisis*, 4 deaths from tubercular meningitis, 2 deaths from *tabes mesenterica*, and 6 deaths from other forms of the disease.

Of 9 deaths caused by malignant diseases 3 were caused by carcinoma, 3 by sarcoma, and 3 by cancer (undefined).

Prematurity caused the deaths of 7 infants.

Diseases of the brain and nervous system caused 17 deaths, including 6 deaths from *convulsions*, 2 of the latter being of infants under one month, one of an infant over one month and under one year, and 2 of children between the ages of one year and 5 years.

There were 25 deaths from diseases of the heart and blood vessels and 18 deaths from bronchitis.

Of 2 deaths attributed to accidental causes, one was by drowning.

In 4 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases were all deaths of infants under one year of age.

Fifty-one of the persons whose deaths were registered during the week were under 5 years of age (34 being infants under one year, of whom 12 were under one month old), and 43 were aged 60 years and upwards, including 22 persons aged 70 and upwards, of whom 5 were octogenarians. Two males were stated to have been each aged 90 years.

The Registrar-General points out that the names of the cause of death printed above in italics should be avoided whenever possible in Medical Certificates of the Cause of Death.

STATE OF INFECTIOUS DISEASE IN THE DUBLIN REGISTRATION AREA AND IN BELFAST.

The usual returns of the number of cases of infectious diseases notified under the "Infectious Diseases (Notification) Act, 1889," as set forth in the following table, have been furnished by Sir Charles A. Cameron, C.B., M.D., Medical Superintendent Officer of Health for the City of Dublin; Mr. Fawcett, Executive Sanitary Officer for Rathmines and Rathgar Urban District; Mr. Manly, Executive Sanitary Officer for Pembroke Urban District; Mr. Heron, Executive Sanitary Officer for Blackrock Urban District; Dr. R. A. O'Donovan, Medical Superintendent Officer of Health for Kingstown Urban District; and Dr. Bailie, Medical Superintendent Officer of Health for the City of Belfast.

TABLE SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the City of Belfast, during the week ended November 2, 1907, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

CITIES AND URBAN DISTRICTS	Week ending	Small-pox	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Continued Fever	Typhoid or Enteric Fever	Erysipelas	Puerperal Fever	Varicella	Whooping-cough	Cerebro-spinal Fever	Total
City of Dublin	Oct. 12	-	*	*	5	-	-	11	-	-	7	14	1	*	*	*	38
	Oct. 19	-	*	*	5	-	-	5	-	4	6	13	-	*	*	*	33
	Oct. 26	-	*	*	10	-	-	5	-	4	21	12	-	*	*	*	52
	Nov. 2	-	*	*	9	1	-	3	-	2	12	7	1	*	*	*	35
Rathmines and Rathgar Urban District	Oct. 12	-	*	*	3	-	-	1	-	-	-	-	-	*	*	*	4
	Oct. 19	-	*	*	1	-	-	1	-	-	-	-	-	*	*	*	2
	Oct. 26	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Nov. 2	-	*	*	-	-	-	3	-	-	-	-	-	*	*	*	3
Pembroke Urban District	Oct. 12	-	3	-	-	-	-	-	-	-	-	1	-	*	-	-	4
	Oct. 19	-	-	-	-	-	-	-	-	1	2	1	-	*	-	-	4
	Oct. 26	-	-	2	-	-	-	1	-	-	1	1	-	*	-	-	5
	Nov. 2	-	2	-	-	-	-	-	-	-	1	-	-	*	-	-	3
Blackrock Urban District	Oct. 12	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Oct. 19	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Oct. 26	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
	Nov. 2	-	*	*	-	-	-	-	-	-	-	-	-	*	*	-	-
Kingstown Urban District	Oct. 12	-	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-
	Oct. 19	-	*	*	2	-	-	-	-	-	-	-	-	*	*	*	2
	Oct. 26	-	*	*	2	-	-	-	-	-	-	-	-	*	*	*	2
	Nov. 2	-	*	*	1	-	-	-	-	-	-	-	-	*	*	*	1
City of Belfast	Oct. 12	-	*	*	9	-	-	6	-	8	3	5	-	*	*	3	34
	Oct. 19	-	*	*	5	-	-	8	5	7	4	11	-	*	*	1	41
	Oct. 26	-	*	*	12	-	-	7	-	5	4	9	-	*	*	5	42
	Nov. 2	-	*	*	14	-	-	8	1	3	11	5	-	*	*	2	44

CASES OF INFECTIOUS DISEASES UNDER TREATMENT IN DUBLIN HOSPITALS.

During the week ended November 2, 1907, 4 cases of measles were admitted into hospital, 8 were discharged, and 13 cases remained under treatment at its close.

Ten cases of scarlet fever were admitted into hospital, 9 were discharged, there was one death, and 43 cases remained under treatment at the close of the week. This number is exclusive of 12 convalescents under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital.

One case of typhus was admitted into hospital during the week, one was discharged, and one remained under treatment at its close.

Three cases of diphtheria were admitted into hospital, 2 were discharged, and 16 patients remained under treatment at the close of the week.

Twelve cases of enteric fever were admitted into hospital during the week, 4 were discharged, there were 2 deaths, and 48 cases remained under treatment in hospital at the close of the week.

In addition to the above-named diseases, 10 cases of pneumonia were admitted into hospital, 8 were discharged, there was one death, and 25 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, November 2, in 76 large English towns, including London (in which the rate was 15.2), was equal to an average annual death-rate of 15.7 per 1,000 persons living. The average rate for 8 principal towns of Scotland was 16.4 per 1,000, the rate for Glasgow being 16.3 and for Edinburgh 15.4.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by Sir Henry D. Littlejohn, M.D., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended November 2. From this Report it appears that of a total of 67 cases notified 20 were of scarlet fever, 13 of diphtheria, 8 of erysipelas, and 2 of enteric fever. Among the 341 cases of infectious diseases in hospital at the close of the week were 163 cases of scarlet fever, 36 of measles, 35 of diphtheria, 26 of whooping-cough, 13 of enteric fever, and 13 of erysipelas.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of October,* 1907.

Mean Height of Barometer,	29.561 inches.
Maximal Height of Barometer (4th, at 9 p.m.),	30.092 ,,
Minimal Height of Barometer (18th, at 2 p.m.),	28.768 ,,
Mean Dry-bulb Temperature,	49.4°.
Mean Wet-bulb Temperature,	47.7°.
Mean Dew-point Temperature,	46.0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.314 inch.
Mean Humidity,	88.9 per cent.
Highest Temperature in Shade (on 5th),	65.1°.
Lowest Temperature in Shade (on 24th),	32.8°.
Lowest Temperature on Grass (Radiation) (16th),	30.0°.
Mean Amount of Cloud,	70.7 per cent.
Rainfall (on 29 days),	5.121 inches.
Greatest Daily Rainfall (on 8th),	.711 inch.
General Direction of Wind,	W.

Remarks.

True to its wonted character, October of this year was a rainy month—the total fall being 5.121 inches on 29 "rain-days." The heaviest rainfalls took place on the 8th (.711 inch), 30th (.519 inch), and 9th (.480 inch). But the month was mild.

The unusual number of 29 "rain-days" establishes a record for wetness, but the total rainfall was exceeded in October, 1875 (7.049 inches on 26 days), and 1880 (7.358 inches on 15 days). In the latter October 1.696 inches fell on the 5th, and no less than 2.736 inches on the 27th. Thunder and lightning, with heavy rain, prevailed between 4 and 7 p.m. of the 9th. A fragment of a rainbow-coloured solar halo was seen at 9 a.m. of the 30th.

In Dublin the arithmetical mean temperature (49.9°) was very slightly above the average (49.5°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 49.4°. In the forty-three years ending with 1907, October was coldest in 1892 (M. T. = 44.8°) and in 1896 (M. T. = 45.0°). It was warmest in 1876 (M. T. = 53.1°). The M. T. in 1906 was 51.2°.

The mean height of the barometer was 29.561 inches, or 0.279 inch below the corrected average value for October—namely, 29.840 inches. The mercury rose to 30.092 inches at 9 p.m. of the 4th, and fell to 28.768 inches at 2 p.m. of the 18th. The observed range of atmospheric pressure was, therefore, 1.324 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 49.4°, or 7.4° below the value for September, 1907. The arithmetical mean of the maximal and minimal readings was 49.9°, compared with a thirty-five years' (1871–1905) average of 49.5°. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.* × .485), the mean temperature was 49.8°, or 0.5° above the average mean temperature for October, calculated in the same way, in thirty-five years, 1871–1905, inclusive (49.3°). On the 5th the thermometer in the screen rose to 65.1°—wind, W.S.W.; on the 24th the temperature fell to 32.8°—wind, W. The minimum on the grass was 30.0° on the 16th.

The rainfall was 5.121 inches, distributed over 29 days; both the rainfall and the rainy days were much above the average. The average rainfall for October in the thirty-five years, 1871–1905, inclusive, was 2.870 inches, and the average number of rainy days was 18. In 1880 the rainfall in October was very large—7.358 inches on 15 days. In 1875, also, 7.049 inches fell on 26 days. On the other hand, in 1904 only .454 inch fell on 11 days, in 1890 only .639 inch fell on but 11 days; in 1884, only .834 inch on but 14 days; and in 1868 only .856 inch on 15 days. In 1906 the rainfall was 3.318 inches on 22 days.

High winds were noted on 9 days, but attained the force of a gale on only two occasions—the 1st and 18th. The atmosphere was more or less foggy in Dublin on the 8th, 12th, 20th, 23rd, 24th, and 25th. A lunar rainbow was seen on the 19th. Solar halos were seen on the 4th, 16th, and 30th; there was a lunar halo on the 16th. Lightning occurred on the evenings of the 3rd, and 8th, and a thunderstorm on the 9th.

The rainfall in Dublin during the ten months ending October 31st amounted to 22.261 inches on 182 days, compared with 12.366 inches on 123 days during the same period in 1887 (the dry year), 20.466 inches on 145 days in 1901, 24.481 inches on 172 days in 1902, 27.882 inches on 196 days in 1903, 19.601 inches on 163 days in 1904, 20.462 inches on 161 days in 1905, 19.439 inches on 168 days in 1906, and a thirty-five years' (1871–1905) average of 23.030 inches on 164 days.

At the Normal Climatological Station in Trinity College, Dublin, Mr. William J. Good reports that the mean height of the barometer was 29.565 inches, the range of atmospheric pressure being from 30.092 inches at 9 p.m. of the 4th to 28.848 inches at 9 p.m. of the 18th. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 50.3°. The arithmetical mean of the daily maximal and minimal temperatures was also 50.3°. The screened thermometers rose to 65.8° on the 6th, and fell to 33.0° on the 24th. On this latter date the grass minimum was 29.6°, but it was 27.9° on the 16th, and ground frost was felt on 3 nights. On the 5th the black bulb *in vacuo* rose to 98.6°. Rain fell on 27 days to the amount of 4.969 inches, the greatest fall in 24 hours being .730 inch on the 8th. The duration of bright sunshine, according to the Campbell-Stokes recorder, was only 55.5 hours, of which 7.6 hours occurred on the 7th. The mean daily sunshine was but 1.8 hours. The mean temperature of the soil at 9 a.m., at a depth of 1 foot, was 51.6°; at a depth of 4 feet it was 53.8°. The subsoil temperature at 1 foot decreased from 56.5° on the 6th to 47.9° on the 27th. At 4 ft. it decreased from 56.0° on the 1st, 2nd, and 3rd, to 51.2° on the 31st.

At Cloneevin, Killiney, Co. Dublin, Mr. Robert O'B. Furlong, C.B., returns the rainfall in October at 4.98 inches on 28 days, compared with 2.760 inches on 20 days in 1902, 3.820 inches on 26 days in 1903, only .290 inch on 12 days in 1904, 1.01 inches on 14 days in 1905, 3.43 inches on 24 days in 1906, and a twenty-two years' average (1885–1906) of 2.789 inches on 16.8 days. On the 14th .75 inch fell. Since January 1, 1907, 21.30 inches of rain have fallen at this station on 166 days. In October, 1894, the rainfall at Cloneevin was 6.46 inches on 18 days.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was 3.744 inches on 24 days, the greatest fall in 24 hours being .455 inch on the 30th. The mean shade temperature was 47.9°, the extremes being—highest, 67.0° on the 5th; lowest, 29° on the 15th.

Dr. Arthur S. Goff reports that at Lynton, Dundrum, Co. Dublin, rain fell on 30 days to the amount of 5.40 inches, compared with 2:40 inches on 21 days in 1901, 3.45 inches on 24 days in 1902, 3.38 inches on 26 days in 1903; .42 inch on 9 days in 1904, 1.54 inches on 15 days in 1905, and 4.52 inches on 24 days in 1906. The greatest measurement in 24 hours was .63 inch on the 8th. The mean temperature in the shade was 49.9°, the range being from 65° on the 6th to 35° on the 16th and 24th. The mean temperature of October was 50.0° in 1901, 50.9° in 1902, 50.8° in 1903, 51.6° in 1904, 47.1° in 1905, and 50.7° in 1906. Thunder and lightning occurred on the 8th and 9th.

Dr. Christopher Joynt, F.R.C.P.I., registered 5.525 inches of rain on 30 days at 21 Leeson Park, Dublin, the largest measurement in 24 hours being .740 inch on the 8th.

Miss Muriel E. O'Sullivan recorded a rainfall of 5.620 inches on 26 days at White Cross, Stillorgan, Co. Dublin. The heaviest fall in 24 hours was .620 inch on the 30th. On the 19th .500 inch fell, and on the 18th .460 inch.

Mr. R. Cathcart Dobbs, J.P., reports that the rainfall in October, at Knockdolian, Greystones, Co. Wicklow, amounted to 5.665 inches on 24 days. Of this quantity, .900 inch fell on the 30th. From January 1st, 1907, up to October 31st, rain has fallen at Knockdolian on 153 days to the total amount of 25.130 inches. In 1901 the rainfall in the corresponding ten months was 28.030 inches on 135 days; in 1902 it was 31.811 inches on 140 days; in 1903, 30.965 inches on 181 days; in 1904, 22.087 inches on 151 days; in 1905, 22.754 inches on 131 days; and in 1906, 20.998 inches on 135 days.

At Clonsilla, Greystones, Dr. Arthur G. Price recorded 5.37 inches of rain on 27 days. The greatest fall in 24 hours was .90 inch on the 30th.

Dr. Francis P. Leyland reports a rainfall of 6.296 inches on 29 days at the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow. The gteatest fall in 24 hours was 1.412 inches on the 30th, a very heavy downpour taking place between 8 p.m. and 12 midnight of that day. The rainfall to October 31 at this station amounts to 26.728 inches on 174 days. The mean temperature for October was 49.9°, the maximum being 65.6° on the 5th, and the minimum 33.8° on the 16th.

Mr. William Miller states that in the City of Cork there were 27 days with rain during the month—total fall, 5.07 inches, which was 1.74 inches over the average. The greatest day's rain was that of the 20th—0.65 inch. The rainfall of the past ten months was 26.63 inches, which was 3.49 inches short of the average for the same period.

The Rev. Arthur Wilson, M.A., recorded a rainfall of 6.43

inches on 28 days at the Rectory, Dunmanway, Co. Cork. There were many fine and bright days, the rain often falling at night. The heaviest falls in 24 hours were .91 inch on the 17th, .71 inch on the 18th, and .66 inch on the 20th. The rainfall for 10 months of 1907 is 42.31 inches, compared with 43.18 inches in 1905, and 43.29 inches in 1906.

At the Ordnance Survey Office, Phœnix Park, Dublin, the October rainfall was 5.202 inches on 27 days, compared with 2.551 inches on 20 days in 1906, 1.365 inches on 17 days in 1905, .650 inch on 10 days in 1904, and 2.339 inches on 24 days in 1903. The heaviest fall in 24 hours was .737 inch on the 8th. At the Royal Botanic Gardens, Glasnevin, rain fell on 29 days to the amount of 5.360 inches, the greatest daily fall being .97 inch on the 9th.

PERISCOPE.

ALEXANDER MACTIER PIRRIE, A MARTYR TO SCIENCE.

A CAREER of great promise has been cut short by the untimely death of Mr. A. Mactier Pirrie. The son of the late Mr. Alexander Pirrie, C.E., he was born on October 2nd, 1882. He obtained his B.Sc. with honours in anthropology at Edinburgh University in 1904, and qualified as M.B., Ch.B., in 1906. He obtained the Carnegie Research Fellowship in anthropology, and was appointed anthropologist to the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. He went out to the Sudan in the autumn of 1906. Under the direction of Dr, Andrew Balfour, the Director of the Laboratories, Dr, Pirrie made his first expedition up the Nile to the Southern Limits of the Sudan, and penetrated to remote parts of the Behr-el-Ghazal. His second expedition took him to the borders of Abyssinia. On both occasions he passed through some of the most pestilential regions of Africa in connection with certain anthropological and physiological researches, appertaining to tropical diseases, upon which the laboratories are engaged. Unfortunately he contracted tropical fever (kala-azar), and was so prostrated as to be compelled to return to England, leaving Khartoum on June 17th last. He rallied from the effects of the fever from time to time, but was compelled to enter Chalmer's Hospital, Edinburgh, in October. His death took place on Nov, 12th. He was interred at the Dean Cemetery, Edinburgh, on Nov. 15th.

The Gordon Memorial College, Khartoum, Sir William Turner, Principal and Vice-Chancellor of the University; Mr. Wellcome and others were represented, and sent wreaths. A resolution of sympathy has been conveyed to the relatives from the Trustees of the Gordon Memorial College, and other expressions of sympathy have been received from the Liverpool School of Tropical Medicine, &c., &c. It is of interest to note that the first case of kala-azar found in Africa, except a case in Tunis, referred to by Laveran, was reported by Dr. Sheffield Neave, pathologist to the Wellcome Research Laboratories, Khartoum. Dr. Neave found the Leishman-Donovan body, the parasite of kala-azar, in the splenic blood of a patient in the Omdurman Civil Hospital. The discovery is noted by the Director in the Second Report of the Laboratories. Dr. Pirrie presented a paper on his African expeditions at the last meeting of the British Association for the Advancement of Science, but was prevented from being present on account of his illness. He brought back a most valuable collection of objects of scientific interest. At intervals during his illness he was engaged on his Report of the Carnegie Institute and the Wellcome Research Laboratories, Khartoum, for which institutions he acted jointly in the important work he carried out in the Sudan.

THE TORPEDO AS A THERAPEUTIC AGENT.

As might readily be anticipated, the peculiar and powerful physiological gift which distinguishes the torpedo early attracted the attention of primitive observers. And, like most other potent and highly specialised properties of the members of the various kingdoms of Nature, attempts were made to utilise the unique power of the "*Crampe-fish*" in the alleviation of the physical derangements of the human economy. Of this fact we find an interesting item of therapeutic record in a paragraph of "A New History of Ethiopia. Being a Full and Accurate Description of the Kingdom of Abessinia, Vulgarly, though Erroneously called the EMPIRE OF PRESTER JOHN." This very respectable folio was published in 1682. Its text had been "Made ***English***, by *J. P.* Gent"—from the original Latin of "the learned ***Job Ludolphus***, Author of the *Ethiopic* Lexicon." The volume contains a very interesting account of the Imperial territory of the lineal descendant of the wisest of kings and his judicious (and patriotic) admirer, the Queen of Sheba. On page 62 will be found the following paragraph:—"Amongst the rest, the *Torpedo* is very remarkable, frequent in *Africa*. The *Hollanders* call it *Frittisfish*, or the *trembling Fish*. For it is of that Prodigious Nature, that if it be touched with the hand, it strikes a most intolerable trembling into the Members. This* [* They shewed him, says *Tillez*, meaning *Almeyda* the Fish, called in Latine *Torpedo*, which he had no sooner taken in his hand, but immediately he felt such a cruel pain in his hand and Arme, that he threw it presently away againe, not able to endure such a tormenting Experiment. (Footnote)]. *Peter Almeyda* the Jesuit experimenting, paid for his knowledge. The *Habessines* cure *Quartan* and *Tertian* Agues with it. The manner thus, the Patient is first to be bound hard to a Table, after which the Fish being applyed to his joynts, causeth a most cruel pain over all his Members ; which being done, the fit never returns again. A severe Medicine, which, perhaps, would not be unprofitable to those that are troubled with the Gout, in regard some say that Disease is to be Cured by Torment. Those *Ethiopians* would certainly believe it, who affirm, that the Vertue of this Fish will dispossess a man of the Devil himself. And yet if you touch this Fish with a Spear or Wand, the sinews of it, though very strong, presently grow numb ; and the Feet of it, though otherwise a swift runner, lye as they were bound, as *Plinie* reports. Which Modern Writers also Testifie to be no untruth."

THE TREATMENT OF RODENT ULCER.

AT the July meeting of the Edinburgh Medico-Chirurgical Society two interesting cases were exhibited by Dr. Dawson Turner. Both were cases of rodent ulcer. The first had been treated three times in as many months by the X-rays without effect, but yielded immediately to the radiations of 10 milligrammes of radium. The second was a severe case, the ulcer being on the front of the nose and three-quarters of an inch in diameter. It was most successfully treated by means of zinc electrolysis. This process consisted of the application of a positive electrode, covered with lint moistened with a 5 per cent. solution of zinc sulphate, to the ulcer, the negative electrode being held in the patient's hand. The zinc ions were thus conveyed through the ulcer towards the negative pole, and it was found that two applications of ten minutes each, the second being made three weeks after the first, were sufficient to effect a complete cure. The ulcer had entirely disappeared, a slight scar being all that remained.—*The Prescriber*, Vol. I., No. 12, Edinburgh, September, 1907.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

NEW TABLOIDS.

Messrs. Burroughs, Wellcome & Co., Snow Hill Buildings, London, E.C., have recently issued the following preparations:—

1. *'Tabloid' Capsule Calcium Iodo-ricinoleate, gr.* 3 (0.194 *gm.*).

Calcium iodo-ricinoleate is a new salt containing a large proportion of iodine, which combines the therapeutic value of calcium and of the iodides. It is tasteless and odourless, and is not affected by the gastric juice. It produces no digestive disturbance, and is well tolerated by patients who cannot take potassium or sodium iodide. Calcium iodo-ricinoleate possesses in a marked degree the valuable action of its components, and in syphilitic cases the results obtained compare favourably with those of treatment by the iodides. It has proved very successful in condylomata and other specific manifestations, whilst in stubborn cases of ulcers, including rodent ulcer, which resisted other treatment, it has been reported to produce a healthy granulating surface. Various affections of lymphatic glands and of the thyroid have been favourably influenced by the administration. Calcium iodo-ricinoleate is suitably presented for therapeutic purposes in the 'tabloid' capsule, which undoubtedly offers the most convenient and satisfactory means of administration. One to three, swallowed with water, should be taken three or four times daily, after food.

2. *'Tabloid' Capsule Sandal Wood Oil, min.* 5 (0.296 *cc.*).

Many preparations of sandal wood oil are unpleasant to take, and may produce symptoms of irritation, which are in many cases attributed to impurities. The 'tabloid' capsule, which contains the pure oil, obviates the nauseous taste of fluid preparations, and prevents eructation, pain in the back, and other discomforts which may follow the administration of impure sandal wood oil. One to six, swallowed with water, may be taken thrice daily, after food.

3. *'Tabloid' Capsule Terebene, min.* 5 (0.308 *cc.*).

The value of terebene in the treatment of chronic bronchitis, catarrh, and other pulmonary conditions is well recognised. In 'tabloid' capsule terebene an agreeable and effective means of administering accurate doses of pure terebene is provided without any of the drawbacks associated with the older methods of administration.

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